HEART DISEASE

its CARE CURE and PREVENTION

J·H·HONAN·M·D

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Suggestions for Persons Suffering from Diseases of the Heart and Blood Vessels. Exercise, Diet, Prevention, etc., and Advice as to the Regulation of Their Lives

By

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WHAT HEART PATIENTS SHOULD KNOW AND DO

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PREFACE

THE object of this little book is to give encouragement and hope to those persons who know that they have heart trouble, to urge those who are suspicious of its presence, but who fear having their suspicions confirmed or who are too strenuously occupied to give much consideration to their health, to seek advice in time; to ascertain as accurately as possible, without undue anxiety, whether the bodily machinery is in good condition or what may be done in way of repair; to help, if possible, both these classes of persons to make the most of their lives with limitations which deviation from the normal imposes, to warn them to avoid those things which every year lead to the needless and tragic sacrifice of innumerable valuable lives.

So many of the world's able men and women might still have had years of usefulness, if they had only observed their limitations or had not held business or social interests of greater moment than their health; unwittingly or indifferently causing or aggravating affections of the heart and shortening the number of their days.

To urge upon every one, whether ill or well, the importance of knowing something about his

physical body, of knowing what the scientific men who devote their lives to the study of the prevention and cure of disease have to suggest, to use such judicious conservatism in the expenditure of his strength and health as he is accustomed to apply to his resources in financial affairs.

This book is in no sense to be a substitute for the physician, nor a promise of health to all who may read its pages.

Again and again in my experience with patients, in noting how many of them harm themselves every day of their lives, in observing how much a favourable forecast depends upon their comprehending certain causes and effects and upon their willingness to co-operate with the physician, again and again in my reading and experience the importance of the patient's knowing more about himself has been impressed on me, and I have asked myself, " Cannot much of the general medical experience and the results of research, recorded for the guidance of physicians, help and lead to a more united and beneficial co-operation? " It is the conviction that it may which has led me to write this book, to make in this form my contribution to the good cause of maintenance or restoration of health, to share in the effort of the various health organisations of the American Medical Association and kindred organisations in other lands, toward educating the public

concerning the prevention and cure of disease and the conditions favourable to the restoration of health and the alleviation of suffering.

In acknowledging my indebtedness for many valuable hints and suggestions in the preparation of this work to the medical writings of Drs. Babcock, Chicago; Broadbent, London; Hay, Liverpool; His, Berlin; Kraus, Berlin; Krehl, Heidelberg; Lewis, London; Mackenzie, London; O. Müller, Tübingen; Russell, Edinburgh; Osler, Oxford; Romberg, München; Vasquez of Paris, and very especially to Dr. Rufus Cole of the Rockefeller Institute, New York, who read the manuscript, it is with the conviction that all of them would ask from me no other recompense than that I may perchance help our suffering fellow-men.

That this book may give hope and encouragement to the discouraged, that it may lead to the prolongation of lives dear to the family and valuable to the community, state and world, is the sincere wish of the author.

J. H. HONAN.

BAD-NAUHEIM,
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THE FORECAST

HOPE stands on the threshold to give an honest word of cheer and encouragement to those who are suffering from heart trouble, many of whom are filled with exaggerated apprehension and fear. "Knowledge never dispelled the terrors of darkness with more effect than in showing the true meaning of the symptoms in affections of the heart," says one of the foremost English authorities on the heart. It seems significant that a man, bearing the name of Hope, no mythical person, but an earnest observer and man of science, is the one to whom much of the terror-dispelling knowledge is due. It was he who first gave a rational interpretation to "heart murmurs," "heart sounds," by the term "heart signs" in place of the fear-imparting morbidities with their incorrect deductions of the then prevailing medical view. It was Dr. Hope who, literally as well as figuratively, marks an era in the treatment of heart troubles, who gave the impulse to further investigations, which continue to this day, converting many of

the heretofore alarming manifestations into blessed warnings and guiding signs.

An undue sense of terror of heart symptoms still prevails in the public mind, partly no doubt owing to the too conspicuous place given to heart failure in mortality reports, a large per cent of the fatalities in these reports being attributed to the heart, whereas the causes were something quite different, the heart simply becoming involved at the very last. From the followers of Hippocrates, who in the fifth century B.C. believed that the heart was invulnerable, there was for centuries an extreme reaction, during which too many ills were attributed to that organ. There still lingers in the public mind a false meaning for manifestations of heart disturbance, such as murmurs, irregularities, palpitations, high blood pressure, all or any of which are signs of derangement not necessarily implying a grave condition, but always deserving serious investigation.

If the progress of heart disease is to be arrested, if it be the preventable disease which the medical profession now pronounces it to be, men should have a better comprehension of heart signs and avail themselves of timely warnings, in order to arrest the development of existing trouble; they should know the causes and precautionary pre-

ventive measures, that the disease may be forestalled. They should realise that the most trivial troubles are worthy of the gravest attention, and that in their understanding of the true value of the signs, whether they be the first or repeated warnings of chronic disease, they would free themselves from depressing and harmful fears or from unconscious or foolhardy neglect, and largely affect their forecast for the future.

That a more favourable view of various heart diseases may be taken is not without fair basis.

In the first place, there is no organ in the body which has such recuperative power as the heart.

Secondly, there is no other organ which can do so much to remedy its own defects or to make compensation for them, adjusting and adapting itself to new conditions in a most marvellous way.

Thirdly, many incurable heart troubles are reparable—they can be corrected, counteracted, the functional or structural heart defects counterbalanced.

Fourthly, medical science knows more about the heart to-day than ever before. Not only are signs of weakness and defect more readily discovered and estimated, but the means of combating the progress of disease are better understood.

Fifthly, the individual often holds his life in his

own hands—a fair assurance of restoration to health depending on his willingness to modify his mode of life for a few weeks or a few years, to take the rest or treatment advised, to be satisfied to walk the full course of life, if running involves danger.

Last, but not least, the individual who has heart trouble has good reason for entertaining hope as long as there is life. Any one who reviews modern medical literature must be impressed with the great number of cases whose histories continue for twenty-five or thirty years after grave manifestations of affections of the heart or arteries, and where the records or reports of many years are only interrupted by the natural ending of the life of the patient or retirement or decease of the physician. Since the writings of conservative medical authorities abound with expressions regarding extreme cases such as "All but miraculous recoveries," since the personal experience of the physician verifies these statements, he can but conclude that there are no "hopeless cases," and that in affections of the heart more than in other ills it may be well said, "As long as there is life there is hope."

Since the comfort or discomfort of the patient and his restoration to complete or partial health

depend largely upon his intelligent attitude regarding his condition and upon the proper regulation or modification of his mode of life, these various subjects are considered in the following pages.

As has been said in the preface, this book is in no sense a substitute for the physician. To make it such would mean failure of its purpose and harm to those who need constant and individual medical care. It should be borne in mind that general suggestions and conclusions made from averages, however helpful and useful to many, apply only to the average person, and though they may be valuable supplements to individual advice, do not take its place.

PREVENTION

THERE is no sufferer who can invest an ounce of prevention with a greater assurance of its yielding the proverbial pound of cure, and many times that pound, as can he who has heart trouble. More and more affections of the heart are being classed as preventive diseases. The majority are preventable in the very beginning, and might have been avoided altogether, which, however, may not seem to help the person who already has heart disease. One does not need to cry over spilt milk, neither does it help matters so far as that particular loss is concerned to tell the unfortunate one how it might have been avoided. At least that is the view the reader may take. The one who has had losses, however, need not continue to have them; in fact, he is the very one who should know that he may prevent them. Medical literature abounds with examples of persons who in youth or middle age manifested symptoms of serious heart trouble, but who, because of the proper regulation of their lives, counted the full number of years allotted to man, while their robust

neighbours and friends who daily gambled with their lives, lost them, without warning, in the very "hey-day" of life.

Preventive measures may not only give years of life, but they may give comfort instead of pain. There are few chronic diseases of the human family so amenable to treatment, and almost none so compatible with a long life of comfort if rationally taken care of, as those of the heart.

Heart diseases may be congenital, in which case they may have been unpreventable, as far as the individual, the medical advisers, and perhaps the parents are concerned. Prevention for these cases must consist in regulation of the life, in respect to a certain handicap. Many persons have hereditary tendencies to rheumatism or to other diseases kindred to the heart, which may date back to carelessness or ignorance of the laws of health on the part of the grandparents or of their medical advisers.

The underlying principles to be observed in the alleviation of heart troubles are proper bodily supplies and proportional waste; activities and relaxation, both physical and mental, in due relationship; moderation in all things, including the application of the general laws of hygiene. When, as is repeatedly the case, I hear persons

state that it is not safe to adopt a child without a satisfactory history of the grandmother, I say, "Why not begin making a generation of good grandmothers?" As it is with moral character, so is it with physical vigour or resistance to disease. Every measure for the preservation of health, for the prevention of disease, for the prevention of the advance of a defective or damaged condition, is just so much in favour of the men and women of this generation, of the grandparents of the future. Not to be misunderstood, let me say that the term "heredity," so far as definite diseases are concerned, is dropping more and more into the background, the majority of diseases being traced to bacteria or direct exposure. There is, however, no doubt in my mind that the health of the parents, the grandparents and the great-grandparents has much to do with the amount of the resistance to disease with which the individual comes into the world. The mode of life of the child, of the youth and the adult may be such, however, as to increase or decrease the inherited resistance.

It is a selfish generation which concerns itself only with the present. It was in the so-called "Dark Ages" that the magnificent buildings of Europe, the great cathedrals were planned, begun

and laboured upon through the best years of one generation, continued through the whole lifetime of the second generation, to be completed and enjoyed in the third or fourth following. The people planned and laboured and builded for the men of the future. They were ignorant of many things which we know, among them the causes and treatment of various diseases, of quick communication and of rapid travel, of so-called labour-saving machines, many of which simply shift the labour from the muscles of men to their nerves; of the modern business and commercial methods, with the tremendous strain, worry and anxiety; but if those of the past could but wake up and behold for a day the men of this generation and their doings, they might be as much astonished and shocked at irrational use or abuse of present-day knowledge and experience as at the wonder of the things of which the modern age boasts. How may this generation be looked upon by the future, this generation with its rush and exertion, its strain, its waste of nervous energy and life? With some perspective and an unbiassed view, the all-wise men of this age might seem very like the "three wise men of Gotham who went to sea in a bowl." This may seem to the reader to have nothing to do with the subject in hand, but it is

very much to the point and a serious theme to the specialist, who sees the nervous breakdowns, the exhausted hearts, the injured blood vessels, directly or indirectly due to modern business or social conditions, or to the lack of appreciation of the value of health in relation to other things and the absence of realisation of the importance of the prevention of disease.

Sir James Barr once said: " I like to get ahead, and when possible treat the patient before the disease arrives. This, fortunately, is often possible in the cases of diseases of the heart."

First, there are the congenital heart defects, preventive measures for which must be directed toward arresting the further development of the disease. Second, the great number of heart diseases which afflict persons in early life, the unprevented preventable sequences of some such acute unprevented preventable diseases as rheumatism, pneumonia, scarlet fever and diphtheria. The lack of prevention of the infectious disease may be traceable more to carelessness on the part of the community or the lack of efficient health laws than to the family or individual afflicted.

Chronic heart disease being present, serious thought should be given to the mode of life, to exercise, clothing, food, etc., all of which

are potent in preventing or furthering the progress of disease. Any one, whether child or adult, who has an infectious disease, the poisons of which affect the heart, should know the importance of rest and of relaxation. Men try to fight off influenza as nothing but a bad cold, when, on account of the heart, it is much safer to stay in bed for a few days, even if the influenza be of a mild form.

Third: A wide class of heart diseases due to errors of living, dissipation in eating, drinking or other vicious habits. This class of diseases may be greatly relieved by correcting the bad habit, stopping the cause, by the living of a rational life. Fourth, a class of heart and blood-vessel diseases which are due to changes in the tissue, coming on with age. These are largely diseases of men, being comparatively seldom found in elderly women, due, no doubt, to the greater exposure the man must naturally endure from the irregular life of his vocation or inclination. Rheumatism is so often a cause of heart trouble that I consider it an advanced symptom or an accompanying symptom of heart disease. Indeed I believe there is no acute disease so often the cause of heart trouble as is acute rheumatism.

RELAXATION

To maintain a normal condition of health in the body it is necessary that body and mind have their activities and rest in due proportion, undue activity, undue rest alike tending to loss of equilibrium in power and energy. The self-regulating mechanism of the heart is based on this principle. Night and day, during sleep or through the waking hours, the normal heart keeps up its contraction and relaxation, every one of the seventy-two (approximately) beats in a minute, followed by a corresponding pause or period of rest, during which it accumulates energy for the next beat or activity. If the equilibrium or relationship of beat and pause, of work and rest be disturbed through nervous or organic influence, there is a resultant or casual morbid condition. Being given a fair chance, the heart maintains its ratio of work and rest, and should be an example to man in regulating his voluntary activities and periods of rest. Too much work, prolonged periods of work without the relative rest, will lead sooner or later to enforced prolonged rest or a complete breakdown.

We are told that certain plants could not be made to bloom before their time, before their period of rest was over, until florists conceived the idea of putting them to sleep with an anæsthetic. They have now been forced to bloom, but both plants and flowers are pale and anæmic.

Modern life, with its increased speed of activity along every route, its excitement, its great business, professional or financial responsibility and strain, its educational, social and pecuniary competition, its luxurious living multiplying the details of care in the home, a place primarily designed for rest, producing high tension in man and woman, tension of the nerves and arteries, tension of mind and body, creates a need for practice of systematic relaxation so greatly neglected in our time by the majority of men, and especially by Americans. The multiplicity of newspapers, the hurrying through the columns at the breakfast table, on the train, on the way to business; the moving-picture shows, with their ever-changing scenes, produce nervous excitement in the mind of child and adult alike. In an hour the mind is obliged to cross the wide ocean, to visit the leading cities of Europe, to review its standing armies, and innumerable hurried sensations are conveyed to the

brain. Having had the telephone, we can now not live without it; but while it simplifies life in some ways, it has, on the whole, much increased the pace and strain.

The increased nervousness and tension to which modern conditions conduce have multiplied the instances of arterio-sclerosis and heart trouble. The importance of *exercise* is taught and dwelt upon in most of the schools. I wonder how often what Professor William James calls the "Gospel of Relaxation" is preached. I believe that teaching rules of judicious and regular mental and bodily relaxation to the young, and the practice of the same in middle life, would be a most potent agent in preventing diseases of the arteries and heart and in assisting nature to overcome disease where it is the result of toxic poison. The agents of work and pleasure, of culture and development are increasing at a tremendous pace. We would not if we could put ourselves back into a slowly moving century, when the news was called out by the town crier, who made his way leisurely through the streets. Professor James quotes a Scottish medical man as saying, "You Americans wear too much expression on your faces. You are living like an army with all its reserves engaged in action. . . . You really do carry too much expression,

you take too intensely the trivial movements of life."

Rest is often so necessary to a weakened circulation that a few days' absolute rest at the proper stage of the trouble may mean as many years added to the life of the patient. In preventive treatment, rest is very essential, particularly after any of the infectious fevers which induce heart disease. In fact, in many of these fevers, in the convalescent stage, absolute rest is the only preventive measure necessary. The person whose heart is weak or overworked should have one or more periods of complete rest daily. He should lie in bed or on a couch with closed eyes, relaxing every muscle, refraining from conversation and reading, and making his mind as nearly a blank as possible. After an illness, a prolonged rest may be necessary, to give time to the weakened heart walls to regain their normal strength. This often requires several days or weeks, or even months, according to the severity of the lesion or the ability of the heart to do its work. In this condition one must exercise patience, bearing in mind, however, that it is far better to remain in one's room a week too long than to put an extra tax on the weakened heart one hour before it is prepared for additional work.

CLOTHING

THE fitly clothed person is not necessarily the one who goes to the best dressmaker or tailor. The fitness of clothing depends upon many things —first, upon the individual's needs or his condition of health or ill health; second, on the external conditions, such as weather, etc.; third, on the bodily activity or his programme of the hour or the day. The best fitting garments may be made with a strange disregard of their use, or their relationship to the comfort or protection of the individual—the utility of dress being lost sight of in the desire for apparel which adorns, when the matter of combining the two is very simple. Man, with his superior intelligence, might be expected to show great discrimination in the matter of clothing instead of the astonishing absence of common sense he so frequently exercises in dress and the great rôle which tradition, looks and fashion play in the choice of clothing for male and female, while the object of protecting the body and at the same time covering it, has a sub-

ordinate place in the individual's attention and thought.

Unlike animals, man has the power to choose his own clothing for the particular climate or weather, to protect himself against snow, rain or intense sun's rays. He knows something or much about his body, about his internal organs and their functions, and with average intelligence and observation is able to clothe himself rationally. In spite of mankind's superior advantages, it is a question as to whether the majority of human beings are as suitably clothed as animals, since most persons wear too few clothes, or too many, or not the right kind for the protection of the body under varied conditions, or those which afford free activity to the bodily organs.

However much the person in vigorous health may with impunity violate the laws of hygiene in dress, such violation should be strictly refrained from by those who have heart trouble, whose circulation and blood vessels are affected. Such persons have less resistance to changes of temperature, and must hence guard against congestion. The departure from the normal standard of health may require relative change of clothing, in weight, in warmth, or in texture. Heart trouble is closely associated with rheumatism, a

disease which is aggravated by carelessness in clothing as regards protection. The reduced strength of the individual, in many instances, makes the matter of selecting garments which protect without burdening, one of importance. Where repair of the heart, the nourishment of the tissues, the free circulation of the blood, is essential to recovery, clothing which binds may retard or prevent repair, if it be not the cause of absolute harm.

Since the nerves have much to do with the maintenance of health, with the repair of the body, and are likely to be very sensitive in diseases of the heart and blood vessels, it is easily seen what mischief may be done by uncomfortable clothing and the consequent local or general nervous irritation.

Where the circulation is impaired, there is often a tendency to the wearing of too heavy or too many clothes, not only out of doors, but in the house as well, and the more hurtful indulgence of sleeping at night in garments which have been worn in the day, thus interfering with the natural outlet of the waste of the body through the skin, and permitting the reabsorption by the blood of the poisonous impurities of which it has tried to rid itself.

Impaired circulation is frequently accompanied by a sensitiveness to cold and an abnormal fear of air, whether cold or warm, coming into contact with the skin. The more clothing such persons put on the worse they get, as all healthful evaporation and elimination of the skin is hindered and their resistance to cold and disease greatly diminished. Fresh, well-aired, warm, dry garments, not more than are sufficient, should be put on at night, and well-aired, fresh underclothes in the morning, after the body has been bathed and thoroughly dried with a towel. Those who wear heavy clothing in warm rooms in the house, though they think to avoid colds by such measures, increase their liability to colds by the retention of moisture next to the skin, the reduction of resistance by the reabsorption of waste poisons, by the difficulty of wearing enough additional clothing on going out into the cold to prevent congestion and its harmful effects.

The person who is sensitive to cold should change his underclothes often. The feeling of chill which the person of disturbed circulation suffers is not infrequently aggravated by the bodily moisture retained by the underclothes. If the individual experiences a greater feeling of cold in the middle of the day than the temperature of the air war-

rants, he should remove his underwear, though it may have been fresh that morning, rub off the body with a dry towel, and put on dry, fresh clothes. Those which he has worn but a few hours may be safely donned again the next day, after they have hung in the light and air. The covering of the feet, both stockings and boots, should be changed after active exercise, because of perspiration or moisture from the ground. The discomfort, which in many cases is attributed to a subjective sensation of cold, not infrequently disappears by the employment of this simple method.

Women often go to the other extreme of wearing very thin clothing in the house in the winter. If a window or door be opened, there is little or nothing to keep the cold air from outside, with the abrupt change in temperature, from coming in direct and sudden contact with the skin, producing congestion of the skin and internal organs. Where there is a predisposition to rheumatism, short sleeves in winter are dangerous.

Clothing should be sufficient, neither too heavy nor too light. It should be right for the special climate, temperature, weather and modifying conditions such as those peculiar to the individual or the external conditions. The clothing should

not *bind* or *interfere* with the freedom of the bodily functions or bodily activity, causing nervous irritation or constant muscular resistance. The irritant of the human body does not produce a pearl as it does within the shell of the oyster. Evening clothes for both women and men are likely to give undue exposure in winter unless great precautions are taken in providing outer wraps of sufficient warmth. Women, however, are the worse sufferers—with their low shoes, transparent stockings, bare necks and arms. Accustomed to hats in the daytime, they have the habit, too, of going out bareheaded at night in the dampness and chill, from which a carriage top does not protect them and which is the cause of many ills or relapses.

For the individual whose strength is to be conserved and exercised with care, every ounce of clothing worn should have a fair relationship to its utility. Women should dispense with lead weights in their gowns and heavy trimmings. Men err in filling their pockets with heavy and unnecessary articles, if the clothing itself be not burdensome. Very thick clothing is likely to overheat the skin, relaxing it and reducing the power of resistance. Persons enervated by heavy or very warm garments, have little resistance to

cold germs and congestion and chill. Clothing which is worn on the street should be well brushed on coming in or changed, as the person who is not well is apt to be more susceptible to bacteria.

Let the reader ask himself, "Where does my clothing bind the body or impede the repair process which the body endeavours to maintain for itself and which proper living and treatment aim to promote?" The woman has heard enough about her corset, but has any one warned her husband against the tight, high or stiff collar, which presses upon and irritates the great blood vessels of the neck or the nerve filaments so intimately related to circulation; against the kind of collar button, which spoils his temper, makes him susceptible to excitement and to anger over trifles, which is decidedly bad for him; against shoes, which, without being too small, may press somewhere or be an uncomfortable shape for the feet, interfering with the free flow of blood in the capillaries and with the comfort and exercise of the wearer; against the stiff, heavy hat, that weighs upon an already heavy head; the tight garters or belt, unconscious agents in disturbing the circulating equilibrium of an already impaired blood current!

The women I want to warn against wearing very taut stocking supporters, which demand constant muscular resistance, whether the wearer be sitting or standing. Muscular effort is thus injudiciously wasted, the muscles overtaxed, exercise becomes difficult or fatiguing and the nerves put on edge. It seems strange that disagreeable symptoms are so often ascribed to obscure causes when the diagnosis of short supporters is overlooked and the addition to their length of an inch or two a simple but efficacious prescription.

Temperance and good sense should be exercised in dress as in all things. It is unquestionably bad for sick or well people to become indifferent to the neatness and appearance of their clothing. Women's clothes may be pretty and becoming without being uncomfortable or hurtful, and the mental effect is decidedly good on the wearers and those about them. Men, too, should not disregard their appearance as if it were all over with them, as if all interest with those with whom they come in contact as well as personal pride had ceased to exist. Let me say right here that it is important that the person who has heart or arterial trouble should keep in touch with his friends and with the things which interest him, so long as he does not unduly tax his

strength. Great prudence must be exercised, and it is often necessary to prohibit all social and business intercourse because patients show so little moderation and judgment.

In regard to the kind of clothing, whether it be woollen or cotton, the former is generally conceded as the better for outer garments in moist, wet or cold weather, while cotton, it goes without saying, is the more comfortable and rational for warm weather. There has been much discussion as to the relative virtue of woollen and cotton for underwear. The one who tries to wipe up a few drops of water from his desk with a woollen cloth, will see the reluctance of wool to take up moisture. Where there is much moisture given off by the skin, whether in the form of perspiration or almost imperceptible moisture, the woollen undergarment refuses to take it up and the individual is likely to suffer from wet skin. We are reminded * that animals clothed in wool do not perspire and that their woollen coats are to afford them protection from external moisture. Cotton for underwear is recommended for its ready power of absorption, the rapidity with which it dries, thus keeping the skin in a dry condition and less subject to chill. A little experiment and observation in relation to external

* *American Medicine*, July, 1909.

conditions and personal peculiarities will show the individual which is the more comfortable for him. Lisle underwear is uncomfortable for the majority of persons because of its hardness of texture and its tightly twisted thread, which is slow to take up the moisture of the skin. Women are likely to go to the extreme in wearing underwear far too light and thin for cold weather, suddenly chilling and congesting the skin on going out from overheated rooms. The outer garments should be selected with a view to conserving the heat of the body or with a view to radiating it according to the weather or temperature of the rooms, as well as to the protection from external moisture. Man, by changing his clothes, is able to equalise the radiation of his bodily heat, to promote or retard the evaporation of bodily moisture, to protect himself against wet or cold. Between the clothing and the skin there should be a temperate zone.

Most mothers, of the middle or upper classes, evince great watchfulness and judgment in clothing their young children properly for the preservation of their health. It is just at the period of the young person's life when the greatest care and discretion should be exercised, that he, or perhaps I should say *she*, for it is the girl

who suffers most, is given her own sweet way, to wear the dress which she likes best, whether it be suitable to the weather or not, to go out from an overheated room into the cold, with transparent stockings and low shoes which are in no sense a protection. How many instances does the physician recall of mothers coming to him almost in despair as to what to do with their frail daughters so reckless of their health. Girls are likely to be reasonable if their intellect and sense are appealed to. In the first place, a girl should be spoken to seriously about herself, should know why just at that time in her life she cannot afford, for some whim, to sacrifice her future health. It seems to me that fathers have taken entirely too indifferent an attitude towards their daughters, or perhaps it is simply an indulgent attitude. At any rate, the majority of them leave this problem to the mothers, when an earnest word from them at the right moment would have great weight. At the time of puberty young persons are likely to show some increased arterial tension, rheumatism or anæmia, of no serious moment if hygienic laws be observed, while disregard of such laws may result in serious trouble of the blood, heart and arteries in later years. This applies to the youth as well as to the girl.

CLIMATE AND ENVIRONMENT

THE temperate zones, in spite of their good name, are practically the home of heart disease. The abrupt changes more or less constant in these latitudes, are the greatest climatic factors in producing or aggravating cardio-vascular-renal disease. America, like other continents, has what is called "excessive" climate, characterised by marked difference between summer and winter, and between day and night—extreme changes often taking place within a few hours. Such excessive and abrupt extremes are a severe strain on the circulatory system of all human beings, and it is only the hardiest who can live year after year subject to these extremes without showing the effects of strain.

In the temperate zone, the mode of life, both business and social, is much more strenuous than in other latitudes. This occasions greater wear and tear to mind and body, and the consequent premature aging of man. Within the temperate zone favoured spots not subject to extreme varia-

tion are found—their latitudinal climate being modified by altitude, or proximity of the sea, prevailing winds, the position of sheltering mountains, etc. Hence it is possible for many persons who suffer from the ill effects of temperature extremes to avoid them by a comparatively short journey from home.

The importance of climatological factors on the treatment of the heart and arteries, and on the precursory or resultant diseases, is apparent from the great number of sufferers sent from home by their physicians to a mild summer or winter climate. With almost the regularity of the migratory birds, the human flocks move northward or southward. The best winter climate for these persons is one which is mild and dry, with some bracing effects in the atmosphere and not so warm as to be enervating. In such a winter climate one may be out in the fresh air many hours in the day; he will be able to take exercise, to walk or drive, to have the benefit of sunshine and air, and to be more comfortable. No one suffering from hardening of the arteries, angina pectoris or weak heart should live through the winter months in a very cold climate where he is subject to the rigours of severe cold or is exposed to the abrupt and violent climatic changes of the early spring. Ex-

posure to vicissitudes of temperature is especially trying to persons suffering from valvular disease or "leaky" heart. Almost all such subjects having an acquired or inherited predisposition to rheumatism, one of the things to be guarded against is change in weather or wet, cold weather; in fact, *anything* that may bring on another attack of this trouble.

I realise that a large number of persons who read these pages will, from various causes, be unable to leave their homes and seek a better climate at a time when they most need change. Such persons I should advise, in a general way, to keep their houses well aired and of an equal temperature, not too hot, as are most houses in the northern cities of the United States; that care be taken that the bedrooms be well aired before retiring, and, when possible, that there be good ventilation in the chamber during the sleeping hours. During the wet, changeable season, the lower extremities of the body should be well protected by high, strong-soled shoes, long warm stockings and warm undergarments. During this season persons who have suffered from rheumatism should not expose themselves to the inclemencies of the weather more than is absolutely necessary. Not only is a changeable climate, with its many incle-

ment days, bad for rheumatism, but it is also likely to interfere with the regular out-of-door exercise which every person who has a rheumatic tendency should take.

Kidney troubles, like those of the heart, show unfavourable symptoms with exposure to abrupt changes of weather or climate. Persons who suffer from defective circulation, from cold hands and feet, are happier and more comfortable in a warm winter climate, where they can be out in the fresh air, than they would be at home in a superheated house, hovering over a radiator.

The diurnal variation of temperature, in a mild climate, of fifteen, twenty or even twenty-five degrees Fahrenheit, is likely to be beneficial to the average person, providing the temperature swings back instead of progressing. Absolutely equable climates are difficult to find, and the only ones which strictly deserve the name are in mid-ocean. This, of course, is not a practicable place for spending the entire winter or summer. Some variation, however, as I have said above, may be advantageous as having a toning effect on the human system.

If the evenings are known to be cool, the person who goes out in the middle of the day to come

in after sunset, should provide himself with an extra coat, to put on when the temperature changes.

Most persons need the bracing effect of some variation in the temperature, but few can stand repeated extreme changes of heat and cold. Prolonged heat and cold are exhausting or overstimulating to the majority of healthy persons. To the average youth, whose heart has greater elasticity and power of adjustment than that of the person past middle life, the mild climate is not essential, except to tide him over to recovery. In fact, if he is eventually to make his home in an excessive climate, long years of residence in a mild climate may deprive him of his adaptability to variations and resistance to extremes.

Some places in the northern latitudes of Europe and North America which, in consequence of the warm ocean currents, have a very mild regular winter temperature, are unfavourable winter resorts, because of their few hours of daylight in the winter months and the little opportunity they afford for outdoor exercise or life. In these northern latitudes there is also likely to be more humidity in the air and little motion in the atmosphere. Neither of these is conducive to sufficient bodily evaporation, and hence these climates are

not to be recommended as winter resorts, because of their temperatures alone.

Large cities seem to have a climate peculiar to themselves. This is attributed to different causes: the combustion of oxygen in the many factories, the atmospheric currents produced by local conditions, greater condensation of moisture, etc. Hence quite different climatic conditions or hygienic conditions may be observed a short distance beyond the city limits.

Besides the sunshine, the fresh air, freedom from chill, the opportunity to exercise which a mild climate affords, there is a decided advantage in being relieved of the monotony of one's room or house. It is good also to have a complete change of scene—for the woman to leave the daily demands made on her at home; for the man to get away from his office and telephone calls.

Aside from favourable climatic conditions, a change in the daily routine of life and of scene is observed to be favourable to the reduction of nervous and arterial tension and of high blood pressure.

A change, such as a visit to friends or relatives in the neighbourhood, is not infrequently attended with beneficial results. The danger in visiting, however, is that patients are tempted to overtax

their strength, in order to be pleasant and companionable guests or in unwisely trying to conceal their defects and limitations.

Where the patient is a good traveller, a long journey or voyage incidental to finding a pleasant summer or winter climate, may be beneficial—if a journey by land, through the interest in change of scene; if an ocean voyage, by the fresh air, the regular quiet life, the pleasant travelling companions he may meet. On the other hand, the journey or voyage may involve a hardship to one whose vitality is much reduced, in which case it is wise to make conditions at home as favourable as possible, and to avoid undue exposure in bad weather. The crossing of high mountains which a journey may involve is accompanied with little risk if the proper precautions be taken, for example, sitting quietly in the seat or lying in the berth. Strenuous sightseeing is not to be recommended—nor is the frequent changing of hotels, with the incidental excitement and confusion, the packing and unpacking of trunks. For the person who cannot afford the expense of a long journey, or a winter residence in a mild climate, harm rather than good may be the result of his leaving home. Under such conditions the patient is likely to worry and fret, to sleep badly,

to economise on his food and comfort by taking poor quarters and board. All of these things should be carefully considered. For persons who are very ill, home is a good place, with advantages and comforts which may more than offset climatic conditions.

For a woman, going away too often involves arduous preparations, such as shopping in badly ventilated stores, running to dressmakers, standing for fittings, and the packing of trunks—all or any of which may do her heart more harm than the most favourable climate can repair. I recall more than one woman who, having regained a fair measure of health and hope, by months of the most careful and regulated living and treatment in a quiet health resort in Europe, has risked losing all she had gained for the sake of a week in Paris and the latest Parisian gowns.

The man who has heart trouble should avoid, as far as possible, worrying details incidental to travel. He should avoid carrying heavy handbags or suitcases. The physical strain of lifting is harmful, as has been said elsewhere; the stretching of the body to take down a heavy suitcase from a car rack is also an undue strain. He must give himself plenty of time for his train, so that he may be spared any nervousness about making

it, and that he may not be hurried in checking his luggage, etc. It goes without saying that he must not run for street cars and trains, which is said to be a strong habit with women, but which seems to me much more common to men.

The man who has to break up old habits, such as drinking alcohol, smoking, drinking coffee, etc., will find it much less difficult to make such change in a new environment.

Heart trouble, in many cases, is accompanied by a cough which is very wearing on the patient and is a strain on the heart. Such cases often find relief in change to favourable climatic conditions.

An excessively hot climate is not favourable to a defective heart, though many are less sensitive to the heat of summer than to the cold of winter. Stout persons who are not able to choose a pleasant summer climate, must be especially careful in hot weather, taking exercise early in the morning or in the cool of the evening. If the man be obliged to go to his place of business, it is better for him to take a few biscuits or a sandwich in his pocket for his noonday repast than to risk going out into the hot sun for lunch and to have, immediately after the meal, the exertion of walking back to his office or place of business. Per-

sons whose occupations keep them outdoors and who are more accustomed to the heat and light, are not so likely to suffer injury from the midday summer heat as are those who spend the greater part of time indoors.

Sunstroke and Heat-exhaustion.—A sunstroke with fever is too grave to be incurred by one whose heart is not normal. Humid heat, even without exposure to the sun, often seriously affects the well and strong, though most frequently those whose vitality is impaired, producing lowered bodily temperature, with collapse, the heart showing all the marks of exhaustion and failure. Persons suffering from heat exhaustion should be put to bed with the hot-water bottle and advice obtained as quickly as possible. Persons who know they are susceptible to moist heat should be careful to limit their activities. After an attack of exhaustion it is well, if not absolutely necessary, to stay in bed for a few days to give the heart a chance to recover.

Air and Light.—Air and light have as great therapeutic power on the heart as perhaps on any other organ, exerting an influence on the blood, affecting nutrition, giving resistance

to infectious diseases, etc. While strong winds are to be avoided by the pedestrian, air in slight motion is beneficial. It is said that indoors, in the ordinary well-ventilated room, there is brought in contact with the individual scarcely a hundredth part as much fresh air as out of doors, and although recent tests seem to show that impure air in motion is less hurtful than like air when still, fresh air continues to have the preference. Air and light also exert a great influence on the mind, indirectly affecting all the bodily functions. The discussions about the hurtfulness of excessive light, or sun baths for the nude body, should not lead to avoidance of sunshine. As in all good things, extremes are to be avoided.

Altitude.—The seashore, the hills or a health resort, if treatment be advisable, may be chosen for the summer season. Many return from a summer at the seashore with the general health and the heart improved.

The individual himself should observe whether the seashore agrees with him; whether it quiets him or excites him nervously, and whether he suffers from constipation there more than elsewhere. If he has had experience at the seashore when in health, and remembers how it affected him, he will

have something to go by before determining where he will spend his summer. The hills or mountains at an altitude of not *over 3,000 feet,* and probably much lower, are more favourable to the health of some persons. Again, while the patient's former experience may be of assistance to him, it is by no means a sure guide as to how such altitudes will be borne with his altered heart condition. If he finds that his customary exercise occasions unusual respiratory embarrassment or palpitation; if he suffers from increased gases in the stomach or from other suspicious symptoms, he had better betake himself to an altitude less unlike that to which he is accustomed. Persons who have lived for some years on a high plateau should change gradually to a much lower level, so that the weak heart may not be taxed by having to accommodate itself suddenly to the increased atmospheric pressure and resistance, and one who has lived in the low plain had better likewise avoid an abrupt change to the plateau or mountains.

EXERCISE

EXERCISE in the strictest sense of the word is the "calling forth of powers," thus implying the presence of powers to be called out. The normal heart in the healthy body has ability to keep up the circulation as well as to store up reserve powers for all ordinary and some extraordinary bodily activities.

Exercise, or what is commonly termed "rational exercise," is the calling out of this reserve without encroaching on the store necessary to keep up the circulation of the blood and the nourishment of the tissues of the body. It is obvious that when the heart is much weakened or diseased, its reserve powers greatly reduced or exhausted, with little more than enough vigour remaining to perform the functions necessary for the life of the body, all attempt to use this power in another way is homicide. In other words, "exercise" should not be confounded with "exertion," which is a pushing out or forward with laborious strain.

The heart may be weakened by lack of exercise,

disuse, or by frequent or prolonged exertion, *abuse.* The first is apt to be concurrent with sedentary habits, the second with extraordinary physical or mental activity, with nervousness, or with poisonous infections of the system, over whose harmful effect the patient may have no direct control.

The natural vigour of the heart should not be permitted to diminish by disuse, neither should it be unduly exerted or strained, nor should the reserve power, essential to the upkeep of the bodily nourishment, be directed to mental and muscular effort. On the other hand, the weakened heart muscle, the hypertrophy or the dilatation may be the result of too great or too oft repeated demands on the organ.

One man sits at his desk all day, failing to exercise the normal powers of his heart, which in consequence become more and more indolent and barely keep up a sluggish or inadequate circulation. Another, by his life, habits, environment, overtaxes his heart directly or indirectly every day of his life.

It is apparent that there can be no development of natural powers without exercise—there can be no health of body or vigour of mind where exercise is entirely eliminated. The unused mus-

cle becomes flabby, the power not called into use diminishes.

The normal heart in a healthy, vigorous body is capable of remarkable feats of temporary exertion without harm to the organ, unless such extraordinary demands be made too often or too long.

Since rational exercise is of such importance where the powers of the organ are normal, how much more important it is where there is some departure from the normal and the reserve store is low. The power of the heart muscle, when hampered by defective valves, by weakened walls, or by arterial constriction, may be so embarrassed as to be forced to do more than its normal work in order to maintain even the circulation. The greatest care should be taken that the organ so weakened or hampered be properly exercised, but not strained.

Where marked heart failure is present and the organ shows itself unable to do its everyday work, the patient should be kept in bed, as every extra demand is fraught with danger.

Where the heart has little reserve force beyond that which is essential for keeping up the circulation of the blood, it will be clear, even to the layman, that rest is imperative in order to give the organ an opportunity to recover itself.

Where marked signs of failure or exhaustion are manifested, the only safe thing for the patient to do is to go to bed and stay there until his physician, whose careful attention he should have at this time, gives his permission for him to get up.

I wish to emphasise that at this period everything may depend on the patient's willingness to comply with the injunctions imposed on him, and that if he get up too soon the penalty of ill consequences is likely to follow, from which sincere but tardy regret will not exempt him. No muscular activity, except that which is accurately prescribed for the particular person, should be indulged in by one whose heart has barely the power to keep up the circulation.

Exercise in the therapeutic sense of the word is as impossible where there is an absence of reserve heart-power as it is for a man to take a coin *out* of his purse when there is no coin therein.

The miser who hides his savings in his sock does not receive the interest which the judicious use of his money would bring, while the extravagant, improvident person or the unfortunate one, whose principal has been greatly reduced, will have to use great care and discretion in the investment of the little remaining or find himself bankrupt on the proverbial rainy day. It stands to

reason that the person whose heart is not normal should be sure that he is not wasting or diverting his already reduced heart force.

The suggestions which follow in this chapter are for those who are able to be up and about; whose reserve-power principal is below par, but who may regain a comfortable living by a rational course and by being neither apprehensive nor reckless.

Very *abrupt changes* in the manner of life or in the amount of activity are unadvisable for the person in average health, for the heart needs time to accommodate itself to the increased or diminished demands made upon it. The man who is accustomed to an active outdoor life may suffer great injury by confining himself steadily to his desk, while the professional man or brain worker, who leads a sedentary life, should give himself careful and graduated training before engaging in sports, long tramps or hill-climbing. Heart strain is frequently produced by just such indiscretions. The soreness of the muscle of the leg or of the arm, unaccustomed to climbing or tennis, will do no harm in itself. It may indicate, however, especially when the heart is not normal, that too sudden and unaccustomed demands have been made on that organ, as well as on these muscles,

and that prudence suggests the gradual training of both. It must not be lost sight of that there is an essential difference in the amount of activity which constitutes beneficial exercise for the person whose heart is diseased or hampered by hardened blood vessels or embarrassed by other organs, and for one whose heart is normal and not deranged or disturbed.

Some persons become timid, and oppressed with fear and apprehension, as soon as they are advised to restrict their activities. This is a very unfortunate thing, as they are thus apt to curtail their exercise too much, to worry about everything they do, and to brood in the house, when exercise, air and light would give strength and cheer, and in many instances a fair or entire recovery to health. I have in mind a lawyer, who, having learned that he had heart trouble and that he must avoid sudden and prolonged physical effort, was seized with the conviction that he was doomed. For years, when he walked out it was with his head down and with fear accompanying every step. At last one day he fell on the street, was carried into the nearest house and later taken to his home, where he was for some time kept in bed. When he was able to be about again, it was with greatly increased fear. Finally his physician,

knowing that the patient was exaggerating the seriousness of his condition to such an extent that he feared to take the sane exercise so necessary at this stage for his restoration to health, ordered him to *saw wood,* beginning with one stick the first day and increasing his task as his strength grew. The lawyer protested, asserting that he would never survive; but the doctor insisted, and finally had his way. Before many months the lawyer was sawing enough wood for his fireplace and walking out on the street with head up and with confident step. He has been walking that way for at least twenty-five years since and is still an active, influential man in his community. While there are very few persons for whom this particular kind of exercise should be recommended, there are no doubt legions who because of their harmful and unjustified fear and the consequent restriction of their activities need to be set to sawing wood, figuratively if not literally.

Still another class of persons are so impatient, impulsive or impetuous that they recklessly or abruptly rush at everything they undertake, doing themselves harm at every turn. The person who has heart trouble should ascertain as nearly as possible what his power-resources are and what his limitations. The health expert will be able

to give a good average estimate, though not with the mathematical accuracy that a bank accountant can of one's pecuniary reserve. It is easy for the individual who is not over-apprehensive to know by the cardiac discomfort or distress which he feels when he is imprudently nearing or crossing the boundary of his circumscribed power. He should keep in mind that much depends on his taking a sane view of the situation, on modifying his activities—increasing them or diminishing them—and for taking more frequent periods of rest or relaxation as his condition may seem to demand. The person whose heart response is diminished below the normal should not continue his exercise, whether walking, games, or gymnastics, beyond the point of cardiac fatigue, which manifests itself in various ways—by shortness of breath, palpitation or other forms of discomfort or distress. Whoever the person may be and whatever his peculiarities, it is well for him to bear in mind the importance of keeping within this limit, of heeding the warning on the approach to the boundary line of danger.

Walking.—Where walking is admissible it is one of the very best forms of exercise. Short walks, with frequent intervals of rest, are, on the whole, to be recommended above long, unbroken

ones, as are short periods of exercise of any and every kind. Pleasant companionship is valuable, but not so the companionship of the over-solicitous person, or of the over-exciting or the uncongenial one. There are exceptional instances where exercise may be continued for longer periods, but since the patient himself cannot determine these, he should observe the danger signals and keep on the safe side. When I advise a patient to walk as much as he can without feeling fatigue, I don't mean for him to walk a mile or two from home, with no thought of return until unpleasant symptoms show themselves, and when the entire distance must be covered again, with every step exhausting, instead of exercising, the energy of the heart. The head and the heart may be tired long before the feet grow weary. Walking against the wind and talking against the wind should be avoided, if not prohibited altogether.

The one whose heart is not strong should be the listener in his daily walks, reserving what he has to say for the rests on the wayside or restricting his answers to "yea and nay." Especially is talking to be avoided while climbing stairs or in making an ascent, however slight. Stair climbing, especially one flight, is usually permitted to the person who is able to walk about. It

should, however, be done very cautiously and slowly, with frequent stops, if there be any difficulty in breathing. Rest should be taken before climbing stairs after coming in from a walk of any distance. The strain may be greatly decreased by making the ascent backwards. The carrying of heavy parcels, of books, etc., should be avoided on walks and in going up and down stairs in the house. Heavy clothing, that which has more weight than is necessary to protect the body, should not be worn. The long fur coat, so effective in the wind, is too heavy for any but the strongest pedestrian. An extra undergarment, to be laid off on coming in, may afford sufficient warmth and protection for the cool day, without adding any burden of weight, while a light wrap may be carried to guard against sudden cooling off. Comfortable shoes, clothes which leave the body free for the muscular activity, are not unimportant. The feet must be kept dry. In the parks and on the walks in many of the European health resorts the benches are provided with footrests, a safeguard against the moisture of the ground. Sitting on the ground is attended with risk for persons with predisposition to rheumatism.

Nature studies or amateur photography often

afford a pleasant and diverting interest, not only in keeping the patient outdoors in the fresh air but in giving some purpose other than that of health-seeking to his walks. Mountain climbing must be refrained from. Strenuous mountain climbing should not be undertaken by any one, no matter how well he may think himself, without an examination and an assurance that it may be done with safety. It is folly for the brain worker, who has been confined in his office for months, who takes little or no exercise, or who, if he walks to and fro from his place of business, goes over level, paved streets, and who, besides, is accustomed to the atmospheric pressure of the lowlands, to undertake mountain climbing without gradual training and without knowing something about his physical condition. It is folly of this kind that brings on many of the heart troubles. If there is already high blood pressure and tension in the arteries, the added work and tax on the heart will involve a great element of risk. At certain health resorts, which afford a variety of walks at different degrees of elevation, the gradual ascent is prescribed for selected cases of weak heart or for the obese, the effect of the gradual increase in ascent, pace and distance being carefully watched.

Walking or other exercise should not be indulged in for an hour or more after a meal has been partaken of. Neither should exercise be taken on an empty stomach nor immediately before or immediately after bathing. Exercise should be taken regularly and, if possible, in the open air. Those with rheumatic tendency must avoid exposure in bad weather.

It is difficult to decide whether the automobile has done more harm or good. Where it has taken city people into the country; where business or professional men have been attracted from their offices; where the women have been invigorated by the fresh air instead of coming home from teas and receptions tired from standing and talking and the confused sounds of voices; where walking or riding is too much of a strain on the heart, the automobile has been a great benefactor. On the other hand, I am mindful that many men and women are forgetting *how to walk,* because of their cars; and just how responsible the car may be for diminished or dwindling heart power it is impossible to say. High-speed touring is too exciting for one whose heart is not strong; motoring in crowded streets, or over-fatiguing tours, are to be avoided, as well as talking against the wind. Sudden muscular effort, jumping off and on street

cars, running for trains must be abstained from when the integrity of the heart is at all questioned. Tennis is too violent an exercise for the middle-aged person, who has heart trouble. It is, however, often permitted to young people whose hearts show some irregularity. No risks should be run, especially after an acute disease, when the organ must have time and protection to recover itself.

Moderate bodily activity, muscular contraction and relaxation facilitate the nourishment of the tissues of the body and the healthful exit of the blood from the capillaries. With every movement of a muscle, and with every contraction, the impure blood charged with the waste, poisonous matter is expelled and hurried on its way through the veins, while a fresh supply of blood carrying food for the tissues, rushes in.

While judicious exercise promotes the nourishment of the tissues of the body and the healthy stimulation of the activity of its organs, imprudent activity may overfeed, while undernourishing, the tissues, overwork the heart and overstimulate all of the organs.

Intemperance or dissipation of energy or power is apt to produce in the normal system a condition of inefficiency, while in the system already not

up to the normal standard there will result a partial or complete loss of balance.

The processes by which judicious exercise strengthens the heart, improves digestion and assimilation, promotes elimination, and the processes by which injudicious exertion upsets the equilibrium and harmony of the system, are many and subtle.

Many of the mistakes made with children are unpardonable. How often are children sent out to play and to indulge in excessive activities after acute attacks of fever, diphtheria and rheumatism from which they have apparently recovered, while in reality the heart is still suffering from the poisons of the acute disease. How often, it is sad to record, must the blame be attributed to the parents who, through ignorance or economy, discontinued medical advice as soon as the child was able to be up!

Many an adult who reads these pages may have an infantile history of this kind which is responsible for his present trouble. Over-cautious parents, on the other hand, may harm their children by detaining them too long as prisoners in their room or bed when moderate outdoor exercise would do them good.

No definite rule can be laid down here for

exercise after acute illness, especially for children. I want, however, to emphasise the importance, after the individual is up, of watching the condition of the heart, and of regulating the exercise, and to impress on the parents that neglect in this matter may lead to serious heart trouble. Even when the greatest care is taken, children present a difficult problem, so prone are they to neglect caution in their play and to indulge in romping games which, while the heart is still suffering from the effects of the acute disease, may produce irreparable heart defect. Such children should be watched in their play, until it seems safe for them to be unrestrained. The sooner they can with safety be like other children in their activities the better. It is bad for a young person to put too great restraint on himself, to grow up thinking too much about himself and restricting to an unreasonable degree all his movements.

With the greater number of young people, when proper care has been taken in the beginning, it is only a question of a little time until they may be permitted to participate in rowing, horseback-riding, swimming, dancing—all, however, in moderation. Racing for boys is attended with danger, because of the feeling of competition which urges

them beyond their strength. Football is too violent and exciting. Marathon racing, needless to say, is on the prohibited list, and I believe that few boys, even the most robust, should attempt this race, especially at the period of puberty, when the system is readjusting itself.

The kind of exercise which the individual enjoys should be permitted, unless there are signs that it causes undue exertion, or the conditions be such as to make the experiment unwise.

Golf is a splendid form of exercise for many persons, old and young, suffering from heart troubles, not only for the exercise itself, but for the mental effect produced by the interest in the game. Where driving is considered too active, the patient may interest himself in putting, or approaching. Outdoor games are always preferable to indoor ones.

Cards, and especially card parties, are too exciting to most heart patients, producing sleepless nights. A quiet game of cards may be indulged in early in the day, but progressive parties, playing for stakes or prizes, games in the evening, should be avoided always.

Massage is a passive exercise, which may be beneficially employed where active exercise is attended with danger, or it may be a valuable sup-

plement to active exercise, especially where the latter is very restricted.

Massage must be given with a view to the individual needs and condition of the person, and the effects on the heart and blood vessels carefully watched by the medical adviser. Heart gymnastics, passive movements, so very beneficial in given cases, must be prescribed with discrimination. Passive exercise, like active, should be refrained from immediately after meals.

Massage, an excellent method of passive exercise when used in the proper cases, should be given by an expert who thoroughly understands the condition of the patient as explained to him by the physician whose general or special supervision is very essential. If an otherwise healthy person has a pain in his arm, back or leg, a good massage will in most cases be beneficial; but he should, if he love reason, heed the warning against indiscriminate pounding and rubbing when such a vital organ as the heart is below par. In many cases, where even very restricted active exercises unduly tax the heart, quite rigorous passive exercises such as massage may be administered with benefit, but it should be borne in mind that massage is a form of treatment that, like a powerful drug, should be prescribed and the effects watched carefully.

Besides massage, there are various medical gymnastics and movements which, like other forms of exercise in proper degree, tend to promote the elimination of waste and to increase the tone of the heart walls, increasing the strength and working capacity of the organ. They must, however, be given with great discretion, and the results carefully watched and discontinued if the signs are unfavourable.

A system of Swedish movements, known as the "Ling movements," or somewhat modified as "resistant movements," are of undoubted efficacy in certain selected cases of heart trouble. The movements consist in extending and flexing arms, legs or body against the uniform resistance of an experienced operator. All such exercises and movements are forms of treatment and should not be taken without medical supervision.

It should be kept in mind that age imposes natural and normal restriction, which are not the result of disease, and that the man of seventy-five has a different normal cardiac response from the one of twenty-five; that while right living and proper treatment may prevent premature age, from which so many suffer, no human being has the power to make himself or anybody else younger than he actually is.

Lifting puts a great strain on the heart, as it involves stooping and bringing the body back to an erect position, in addition to raising some weight. Lifting suitcases or heavy travelling-bags should be avoided, as well as stretching to take them out of racks overhead. There should be some way to save the man from explanations or the hurtful compliance with correct social forms. He is too sensitive to permit a lady to lift or move her own heavy chair or to let her pick up her own handkerchief which has fallen, or to be seated, while she thoughtlessly remains standing.

Women who have heart trouble sometimes suffer exhaustion after washing their own hair or even from dressing it, if the hair be heavy and hard to arrange. Sudden muscular effort, as running for cars, jumping off and on moving cars, should be refrained from by every person whose heart integrity is at all questioned.

After exercise there should be a period of rest, in the recumbent position, unless contraindicated. After meals there should again be rest or abstinence from muscular activity.

Rolling on the floor to reduce obesity is by far too strenuous a measure for any but the very vigorous. Although the method seems quite com-

mon among women, I hesitate to warn against it, lest some new mischief be suggested, as was done by the oft-quoted over-anxious mother who, before she went from home to spend the day, warned her children against everything she could think of that might do them harm, and called back as a parting message: "Children, don't put beans up your noses." She had gone but a short way when the neighbour ran after her to tell her that all the children had beans up their noses.

The average man who has passed middle age—the age of forty or fifty—should consider that the range of the development or expansion of his powers has been reached, and that the range even in the healthy person becomes gradually, from this time on, smaller and smaller. The flexibility and response of the heart and arteries being diminished, no such active demands should be made as in youth when the powers naturally increase and grow in strength.

The importance of the personal element makes it impossible to lay down absolute rules of exercise, which must necessarily vary, not only according to the particular heart trouble, the constitution, the mode of life of the individual, but according to the personal temperament as well.

DIET

"I commend rather a diet for certain seasons than frequent use of physick: for those diets alter the body more and trouble it less."—BACON.

DIET is as necessary to the maintenance of health and the restoration of impaired health to civilised human beings, as food is for the maintenance of life for every living creature. Diet is man's food, not food as foodstuff alone, anything capable of sustaining or nourishing the body, without specification of circumstance or condition. Most people think of diet as a strict régime, as abstinence from the kind or amount of food to which they are accustomed, whereas diet is nothing more than rational food, the kind which should distinguish that of man from that of the animal, a factor in the preservation of health for the well and an important curative agent for the ill. Again, many people think that if the chemist proves that a doubtful substance has food qualities, that the matter is settled, and that henceforth there should be no discussion as to its being good for man. How often we hear, " but Professor X says alcohol is a food," or " Professor A says coffee

is a food," as if the question of food quality were of the foremost importance. In fact, it is of little moment in comparison with other qualities in deciding whether coffee and alcohol have claim to a place in man's diet.

Diet implies choice and system—the selection of forms and kinds of the various articles of intake, regularity in eating and amount of the daily supply of the body.

In choice of supply, man should be governed not alone by the experience of mankind or by the results of science, but by the two methods of knowledge combined. Experience seems a slow but cruel teacher, and the different races of men dull or indifferent pupils, through the long centuries, since year after year and century after century they have made the same hurtful or fatal mistakes in eating and living. In the past, men were governed more by necessity of environment and conditions in their choice of food than they are to-day, as well as more by their ignorance of the chemical composition, energy values, the digestibility and assimilability as estimated in modern research. They were no doubt many times the victims of circumstances, as well as of ignorance. To-day, with our ships and trains bringing the produce of the world to our ports and inland

cities, with the vegetables and fruits from the north and the south at all seasons, with tests of food values, as to the kinds and amounts suited to man, had for the asking, it is strange that men continue to eat irrationally, that appetite is the chief regulator or irregulator of their body supply. Appetite is certainly a blessed thing when it is the former, and a Nemesis when the latter. Men who are wont to overindulge their appetites or whose natural appetites have become perverted, are likely to go on, in spite of warnings, until pain and suffering make them turn from every dish with an unpoetic interpretation of Shakespeare's: "This may prove food for my displeasure." Dietetics is not an exact science. Laboratory tests and methods of food values, digestibility, etc., while valuable supplemental guides, will never become substitutes for clinical or personal experience.

To the reader who asks: "What has all this to do with heart trouble?" let me say that the matter of giving the body proper supplies is one of foremost importance in the preservation of the health of man. Irrational eating plays an important rôle in the cause and aggravation of diseases of the arteries and the heart. Auto-intoxication, with the slow or rapid poisoning of the heart and arteries, is in many instances the result of too

much food, or of food not suited to the person or to his condition, while malnutrition, with the tissues hungering, the heart muscle weakened, is often due to lack of sufficient food in quantity or error in quality.

It is with some hesitation that conservative physicians employ the term auto-intoxication in speaking to their patients because of the loose use or abuse of the term by irregulars and the danger of erroneous deductions on the part of laymen.*

The man should come before the disease. The very restricted dietary régime which the theorist or faddist has assumed to starve his disease, is likely to starve the man first and the disease secondarily. In other words, the diet should be such as to keep up the nourishment of the body, and selected and regulated in reference to the particular condition of health or disease.

It may be a lowered power of resistance which has given the disease opportunity to invade the system, hence any course which reduces the defence of the body should be avoided. There are other forms of "The lowering treatment" than that of frequent bleeding of the patient to which

*Auto-intoxication,—poisoning by faulty metabolic products elaborated within the body. *Gould's Medical Dictionary.*

George Eliot refers, the most common of which is undoubtedly due to errors in diet, to undereating or overeating, to irregularity, and to injudicious selection of articles of food.*

In extreme cases of heart failure the patients should be put to bed and given nothing but milk until medical advice can be had. Then is the time, if not before, that they cease to be cases to be advised in a general way—they are the "Johns and Elizabeths" who must have individual study and care, whose diet must be under strict daily control, until an improved condition is established.

As I have said elsewhere, the suggestions here given are not for such persons, but for those who are up and about, who are able to be more or less active.

First, the diet of those for whom we are writing is a liberal one—varied and mixed, including the kinds of food they like, unless contraindicated by the individual symptoms. With impure and adulterated foods absolutely excluded from the ménage, there is an oft-expressed opinion that the kind of food man eats is not of so

*The great value of venesection in certain instances of heart trouble is not to be underestimated. It is the indiscriminate bleeding of patients formerly practised which is condemned.

great importance as *how much* he eats and *how* he eats. As a rule, the average person with heart trouble is able to take a normal diet, or one but slightly modified from the normal, if it be proper and well regulated.

One hears a great deal about the poor people who are underfed, and little or nothing of the great mass of well-to-do who suffer from irrational eating, more commonly from overeating than undereating. That irrational eaters are multiplying daily is attested by the large and ever-increasing number who crowd the offices of stomach specialists and who visit health resorts, seeking relief from the effects of irrational eating, or from indulgence of overeating. The Americans and English are heavy sufferers from dietetic errors. One well-known German stomach specialist dubs America the "Paradise of the Stomach Specialist." Indeed it has been charged that the virility of our nation is becoming jeopardised by our irrational food intake. This seems rather unwarranted if one consider how much more the average well-to-do German eats than the American, but not so surprising when we recall the American weakness for hot bread and pancakes early in the morning and his mince and pumpkin pie at dinner late in the evening.

There are three classes of serious mistakes in diet:

1. Most healthy men eat too much.

2. Many persons suffering from heart trouble eat entirely too little and are under-nourished.

3. About 99 per cent eat irrationally, in choice of food, quantity, manner or time of consumption of same.

These errors are so often met with in cardio-vascular cases that all writers on this subject give diet an important place in treatment. Any treatise attempting to regulate the lives of patients or correct hygienic irregularities must consider the food intake. Not a few heart patients are slaves to their appetites, and are devoted to certain viands which they call "good things," good enough, perhaps, in themselves, but bad for the consumer and some of which are entirely unfit for human food. Sometimes the appetite is so keen as to lead to abuse of the gastronomic powers and a daily indulgence of taste which overtaxes the physical capacity. To such a person the physician's "do" and "don't" is very unpopular. However this may be, every one who has an indication of gout or rheumatism, high blood pressure or hardening of the arteries, should make a study of his diet, and it is particularly for such persons

as show the early signs or symptoms of auto-intoxication that this chapter is written.

How may excessive eating affect the heart and blood vessels? First, by causing an over-supply of nutriment in the system, surcharging the blood stream with toxic products, which effect or bring about an auto-intoxication of the entire system. This result is manifest particularly in the kidneys and blood vessels, the first indications being increased blood pressure and abnormal findings in the urine. The heart must increase its activity very much, in order to supply the enormous amount of blood to the stomach which the digestion of a ten-course dinner requires.

All alimentary substances not required by the system, all those that cannot be assimilated and absorbed by the tissues, must be excreted principally as waste matter, imposing an excessive burden of work on the kidneys. These organs may stand the strain for some time, but sooner or later they are bound to break down under the excessive strain, and too often when medical advice is sought, there has been already much damage done to the kidney substance. This condition so often produces, and is so often accompanied by, heart disease that many medical writers no longer term it " Bright's Disease," but give it instead the

very significant name of "cardio-vascular-renal disease."

As I have said elsewhere, the system, in its effort to rid itself of this enormous waste matter, maintains an excessive tension in the kidneys and blood vessels, which already gave rise to a high blood pressure. If an abnormally high blood pressure continues for any considerable time, a weakened heart is almost sure to be the result. Whether this condition is due to toxins absorbed from the intestines, or whether it is due to the toxins retained in the blood from insufficient excretions of the kidneys, is a matter we leave with the pathologist, rather than to concern ourselves with it here. Let it suffice for us to know that there is an excessive amount of toxins present and that toxins are responsible for cardio-vascular diseases, and that evidence points to excessive or irrational eating as inducing toxins in the system.

The heavy eater may cause embarrassment to his heart, by overloading the stomach, which, in consequence, presses upward on the diaphragm and heart. Such a distended stomach may encroach on the heart to such an extent as to cause serious interference with its normal function. Should the heart be weakened from former ex-

cesses or from other causes, such as acute illness or strain, an encroachment of the stomach on the weakened heart may produce serious damage or indeed may cause a sudden ending to a life which might otherwise, by proper precaution, be prolonged for years.

Overeating and capacious eating are increasing in proportion as nations grow in wealth, and are fast becoming serious physical sins of men, for be it said to the credit of the weaker sex that, as regards the former, they show strength of moderation. The heart is more or less disturbed by distention of the stomach, whether this distention be from too much food or from the formation or accumulation of gases. The heart and stomach are separated only by a cross curtain, the diaphragm, which contracts and relaxes with respiration and upon which the heart rests. It is easily seen how the distended stomach pushing up the flexible partition, encroaches on the heart, producing disagreeable symptoms such as palpitation. The formation or accumulation of undue gases is frequently relieved by a change in diet. Sometimes, however, the flatulence has its source in nervousness. Whether an excess of air is taken in with the food or whether in disturbed respiration the patient

draws the air in, is a matter about which there is still discussion, but which does not particularly concern the patient until some means of prevention be offered.

The food of all heart patients or patients suffering from cardio-vascular-renal disease should be taken regularly; three or more meals, no one of which should be decidedly heavy or with a long fast intervening. The demand of the tissues for nourishment is more or less constant during the fourteen or sixteen hours of mental or physical activity of the day, and it follows that should a long interval precede a heavy meal, the vessels drawn upon to supply the nutriment to the tissues and to supply also the natural and constant secretions of the body during the interval, become very much depleted. Should the patient at this time take a heavy meal, the vessels become surcharged with an enormous mass of pabulum, causing a sudden very high blood pressure. These wide variations in blood pressure and blood volume are likely to cause serious heart mischief. If such person have an impaired valve or the integrity of the heart muscle be below par, the impaired apparatus will with difficulty adjust itself to such extremes. Even though the person feel no discomfort after such indiscretion, serious harm to

an already impaired heart may eventually be caused by the sudden increased work imposed on this organ in the act of digestion. That every community has a tragic demonstration of this fact may be seen by consulting the reports in the daily newspapers—"Heart Failure After a Hearty Meal," "After a Good Dinner," or "While the After-dinner Speeches Were Being Made."

Certain articles of alimentation have high food value, and are easily digested, and yet, notwithstanding, or because of these two things, which in themselves are a recommendation, unduly facilitate the absorption in the blood of an excess of nutrition products, overfeeding the cells, the organs and tissues, or better expressed perhaps, overtaxing them with pabulum which they cannot utilise, affecting sooner or later the blood vessels and the heart.

The cardiac or vascular trouble, caused or aggravated by excessive nutritive substances in the blood, sometimes extending over a period of years, while in the majority of cases rightly attributed to overfeeding or overindulgence, is not infrequently due to poor or faulty digestion and metabolism, as in the case of the moderate or spare eater, whose intake may be as much in excess of his need as is that of the former.

In either case, extra work is required to disintegrate the nutritive pabulum and the removal of the waste of the bodily tissues interfered with and delayed. This retention of the tissue waste, the result of absorption of nutrition products, not vicious in themselves, is very hurtful. If, however, the excess be the product of deleterious substances, bearing injurious toxins, it is apparent that the danger may be much greater.

From the fact that animal flesh and eggs putrefy when they are taken in excess and are retained or delayed in the system after decomposition, many have gone to the extreme of banishing animal food from the diet, which my experience leads me to think is in many cases injudicious. It is my custom to allow meat a few times a week, or once a day, or even oftener, according to the peculiarities of the person or case. While care must be taken that meat be given a less prominent place in the diet, there is absolutely no reason for excluding it in amounts which the individual can digest and use. Where the individual is already suffering from excess of animal products, from delayed retention, or from toxins, infectious disease or gout, all of which have a hurtful influence on the blood vessels and heart, meat should be abstained from or much restricted for a time.

That carbohydrates do not putrefy, and are not, when retained, toxic in themselves, should not lead to the hasty conclusion that they may in every case be taken with greater safety or even with greater comfort.

It should be borne in mind that processes, normal functions, when exaggerated, become morbid.

Although carbohydrates, when unduly retained in the system, "simply ferment," which sounds very innocent, they may when badly used be the indirect cause of deleterious waste of the bodily tissues. When taken in excess or when retained long or when there is abnormal digestion, this fermentation may be so great as to cause uncomfortable distention of the intestines and the stomach, and even harmful encroachment of the latter organ on the heart. Excess of non-putrefiable, as well as putrefiable, food may overtax the system, producing increased tissue waste and a train of disturbances.

Altogether, the mixed diet seems the best one to keep up the strength and give the pleasure of variety, unless there be a positive contraindication. Care must be taken that the amount of food intake be kept in proper proportion to the demands of the body, that there be no overloading

of the alimentary tract. On the other hand, it is important that the intake be sufficient to keep up the strength and nourish the tissues. Lack of sufficient food leads to inactivity and, in time, atrophy of the digestive glands, abnormal metabolism, and a weakening or derangement of one or more of the vital organs. It will be seen that the amount of food consumed is worthy of consideration, though not of such close and constant thought as to become a burden or to lead to morbidity.

Food values are reckoned in calories, heat products, or, more properly, energy products, the normal person requiring about 2,500 calories, less or more, in proportion to his muscular activity, his habits and personal peculiarities. For those whose exercise is restricted, it is more likely to be less than more.

"A small portion of the food eaten is utilised by the body for the building and repair of tissue and the performance of physiological functions in general, but by far the larger part of the food is used as a source of energy for the performance of muscular work, both internal and external, and it is commonly stated also for maintaining body temperature. There is reason to believe, how-

ever, that within ordinary temperature limits, at least, the body maintains this temperature by utilising heat resulting as a by-product from the performance of muscular work. The main function of the food, then, is to enable the body to perform muscular work.

"The source of the power obtained from an engine is the fuel burned under its boiler, and in the same way the source of the energy which the body uses for work of all sorts is found in the food consumed. The theoretical energy-values of all ordinary food materials have been determined by laboratory methods which are similar to those used for determining the theoretical energy-values of coal and other sorts of fuel. Only a part of the energy of the fuel burned under a boiler is available for mechanical work, the efficiency of an engine being dependent upon the kind of fuel used, the principles of construction followed in building the engine, and other factors. The problem of determining the efficiency of an engine—that is, how much of the theoretical energy of the fuel is available for mechanical work—is a matter of great importance. It is equally interesting to ascertain the efficiency of the living engine—the body—and to ascertain the extent to which it converts the energy of food

into effective muscular work. This problem has been studied with the respiration calorimeter and important data have been secured. . . . While there were some differences in individuals (with respect to this factor) the agreement in all cases was sufficient to warrant the assumption that the efficiency of the average man performing muscular work is at least 20 per cent.

"In this respect, man compares very favourably with the best steam engine. It is safe to say that the average efficiency of these does not exceed 14 per cent. Some types of internal combustion engines develop an efficiency of more than double that, but they are at present exceptions. Moreover, in the case of the steam engine, there appears to be a certain rate of work at which it will develop its greatest efficiency, but in the case of man it was shown that with one subject at least an increase in the load did not materially affect the efficiency of the body as a machine. Under all conditions of work, it was found with this subject that about 21 per cent of increased heat production due to muscular work was represented by the heat equivalent of the muscular work performed.

"To state the matter in another way, these figures mean that for every calorie of work the

body performs it must be supplied with 5 calories in its food." *

Physiologists, after making extensive experimental studies on a great number of individuals, have fixed approximate standards for the actual needs of the human body. Most of these observers agree that the average individual is well fed on about 60 grams of protein foods, such as meats, eggs, etc., 56 grams of fats, and about 500 grams of carbohydrates, such as sugar and starches. As I have said elsewhere, the mission of the family physician, as a guardian of the family health, is to prevent illness in the family. For this reason, he should acquaint himself, as far as possible, with the habits and food tolerance of the individuals and with the tendencies and peculiarities of the family. This knowledge is helpful in prescribing a diet in health that will not overtax the digestive organs, causing disease, and that he may prescribe a diet in illness of sufficient calories to sustain the body strength. Nutritive equilibrium is the relation of the amount of nutriment required by the body and the amount of actual nutriment ingested with the food. If the body requires 120 grams protein and the food

* Langworthy and Milner, Yearbook, Department of Agriculture, 1910.

ingested contain 200 grams of protein, the eliminative organs are overtaxed with 80 grams of protein of which they must rid themselves as waste material, since the tissues of the body cannot assimilate this surplus or use it in the tissue-change which is constantly going on in the body.

The average man or woman who has a house can tell without hesitation about how much fuel is required daily for the furnace, and will know the effects of over-economy of fuel and of over-firing. We should think a person a very stupid motorist who did not acquaint himself with the kind and average quantity of oil required to run his automobile, that he might know the efficiency of the machine and not so far miscalculate his supply as to be stranded repeatedly in the country. Yet these same persons, well informed on questions of the day, are not infrequently totally ignorant and often uninterested in the amount and nature of the fuel needed for the engines which furnish the power in their own bodies. If man gave half the care and thought to the machinery of his body that he does to the "beautiful car" of which he is the proud possessor, he would be likely to run a good long course without a breakdown.

Roughly estimated, the following kinds and amounts of food yield 100 calories:

1 egg 2 oz. of meat 1 oz. of cheese (American) ¼ cupful of milk; 1½ cupful of skimmed milk 1 large orange 6 lumps sugar 1 pat, nearly ½ oz. butter 1 good-sized potato 1 large slice bread 1 large slice toast Rice, cooked, 2 tablespoonfuls 400 cupfuls of beef tea, more or less, enough to drown a patient	Yield 100 calories

The Council on Pharmacy and Chemistry of the American Medical Association have done excellent and impartial work in their analyses of so-called food preparations, particularly the class containing large percentages of alcohol. They have shown that some of the very popular ones are absolutely worthless as food equivalents, aside from the amount of alcohol, which may make them hurtful. Some of the magazines have done valuable work in this line, with the advantage over the medical journals of being able to reach the public directly. A careful observer at the University of Pennsylvania, who made some tests with dry proprietary foods, reports that one of these, for which fabulous nourishing claims were made, is so light in weight and poor in food value that the consumer must ingest a dollar twenty-five to one dollar fifty cents' worth to get the equivalent of a five-cent loaf of bread. Another investigator

writes: "Their use in health would result in a polite form of starvation."

The market is glutted with catchy and euphoniously named baby foods. Two of the best known and popular of these, when tested, were found so poor in nourishment that any child depending on them entirely would suffer from malnutrition. The test of a New York physician shows that the quantity advertised as a meal for a six-months-old child is equal in food value to two ounces of good milk. Meat extracts, meat juices, and meat broths have enjoyed a confidence from the medical profession and the public in general which they have never deserved. One physiologist, in condemning meat extracts, says: "They are a delusion and a snare."

As a rule, persons suffering from heart trouble should have a nutritious diet, that no energy of the weakened digestion be expended on foods which do not add nourishment to the tissues. Their diet should be digestible, that no energy be wasted and no gases formed to press against the weakened heart and cause further embarrassment to that organ. It is a mistake for the patient to depend on a liquid or semi-liquid diet, thus eliminating mastication.

In fact, most nutritious foods which agree with

the patient may be taken, for keeping up the bodily strength is a most essential feature in the case of persons with heart or blood-vessel troubles. With advancing years, fortunately, the appetite is no longer as keen as in early adolescence. At this stage of life we do not require so much food, as there is less physical and mental activity, hence the tissues do not require so much nutriment as in the more active period of life. It is often a source of grievous regret to elderly persons who once enjoyed an excellent appetite that they no longer have the keen relish for a good dinner.

Trouble of another form, commonly called "heartburn," may prove a serious annoyance to persons suffering from weak heart. This trouble is not in the heart. It is a form of indigestion, due to the excessive secretion of the juices of the stomach, of the hydrochloric acid, and is known as hyperacidity, or hyperchloridity. This distressing condition is often counteracted by a bit of cooking soda in a cup of hot water, which neutralises the hydrochloric acid in the stomach. Another simple method of stopping this trouble is to take a rasher or two of bacon for breakfast. The bacon, it is claimed, retards the flow of gastric juice, thus

stopping the excess of hydrochloric acid, by slowing the process of digestion. Olive oil also is very effective in most cases, but the fat bacon has the advantage of being a palatable food. The bacon should not be too lean, too salty, nor too much grilled or fried. The first scientific observations in the use of bacon in cases of heartburn were reported by the celebrated German specialist, Professor Ewald, of Berlin.

Moderation in all things should be a strict rule of life for persons suffering from heart trouble. In the matter of diet it is difficult to give definite restrictions. One person may require little food, while another with vigorous appetite may be very uncomfortable and badly nourished on the same restrictions. Persons suffering from heart trouble are often the victims of dietetic fads and extremes which work serious harm. It is folly for an old person whose arteries have already undergone the hardening process to deprive himself entirely of meat if he crave it. It is pathetic to see an old man hungering on a purely vegetable diet, when meat once a day would keep up his strength and satisfy his desire, while the total abstinence from meat at his advanced age makes no material difference in his heart or arteries.

The following suggestions are given to guide

persons suffering from heart and arterial trouble in the choice or regulation of their diet. As a rule the diet should be varied and a mixed one for the best vigour of mind and body, unless contra-indicated.

Relishes before meals are apt to excite an unnatural appetite.

Soups.—Cream soups, cereal or vegetable, are allowable, unless they destroy appetite for solid food, or the liquids are restricted. Meat extracts and broths are to be avoided, as they have very little nutritive value, and are made chiefly of the hurtful properties of the animal tissues, namely the nitrogenous extractives. As the majority of persons suffer from an excess of extractives in the system, it is obvious that meat broths, which afford only temporary stimulation, should be avoided.

Fish.—Fresh fish may be taken in moderation; oysters are good, preferably raw; salmon and mackerel, which are fat and rich, are often indigestible. Lobster and crabs had better be avoided. Salt and smoked fish partaken of sparingly, if at all.

Meat and poultry, as well as fish, may be taken by most persons once a day. Fat bacon is allowable from time to time and beneficial where

there is heartburn or hyperacidity. Sometimes it is necessary to restrict the animal food intake to once a week, or to exclude it altogether for a period. Where the arteries show high tension, the following articles are to be avoided: Liver, kidneys, caviar, sausages, smoked meats and gravies. If a low meat diet or meat-free diet is associated with increased fermentation in the stomach or intestines, the gases causing discomfort, lightly but well-cooked meat should be taken oftener, as it is easily digested and in many cases is necessary to give the proper food balance. Boiled meats are preferable to those prepared in other ways, because the nitrogenous properties are largely extracted.

Eggs, which are exceedingly nutritious animal food and easily digestible, raw more easily than cooked, are indicated where there is impaired nutrition. They, however, when unduly retained, sometimes give trouble from gases and distention, especially when taken late in the evening.

Cereal foods are recommended when well cooked. Bread, wheaten, rye or brown, should be well baked and twenty-four hours old, or toasted for variety, palatability and digestibility. Deficiency in fat is made up by butter.

The new "breakfast foods" are good as far

as they go, which for some of them is a short way, since they are very light. Oatmeal and rice, as in fact all the cereals, should be thoroughly cooked. Many persons show an intolerance for buckwheat. It should be born in mind that the individual has his idiosyncrasies and proclivities; he may show an intolerance for certain recommended foods or he may thrive on others thought to be indigestible. Since cereals supply sugar for intestinal digestion, they should be eaten without addition of sugar. Butter or cream may be added.

Cereals being free from purin * elements are indicated where nitrogenous diet is restricted. Their chief disadvantage, when prepared as soft foods, is that oral digestion or mastication being dispensed with, the stomach or intestines may be overburdened with the bulk; they are too easily digested to keep the digestive organs in good working order when depended upon entirely. Predigested foods are indicated only where the digestion is much impaired, and if depended on too long, weaken the digestion.

Green vegetables, thoroughly cooked and well masticated, are important constituents of diet.

* Purin, a carbon-nitrogen nucleus occurring in many products of tissue change, purin bodies originating in the system during metabolic processes or being derived from purin bodies of foodstuffs.

Though very nearly all of them may be taken, especially the fresh, tender ones, the resistant capsule of beans and peas should be well broken before going into the stomach. Spinach and tomatoes sometimes promote hyperacidity, in which cases they are to be avoided. Mushrooms should be abstained from.

Vegetables are laxative food. Potatoes are allowable, better old than new.

Raw vegetable *salads* should be partaken of sparingly. Salads of fruits or of cooked vegetables, with olive oil and a little lemon juice instead of vinegar, are preferable.

Fruits.—Most of the fresh fruits may be taken when well ripened. Bananas should be very ripe, that the starch be changed to sugar. Some persons show an intolerance for blackberries, strawberries, gooseberries or grape fruit, which is very acid. Although the current view is that the acids of vegetables and fruits do not contribute to an acid condition in the system, an intolerance, especially for the fruits mentioned, is manifested by a number of persons. Stewed fruits, without skins and seeds, are good. Fruits, like vegetables, are laxative, preventing constipation.

Honey is admissible. *Melons* are harmless if very ripe.

Cheese is a good substitute for meat and eggs, and better for some persons, in that it is a non-putrefiable proteid. It should form the chief course of a meal instead of following a big dinner, and avoided altogether if inducing constipation.

Sweets and *pastry* should be partaken of sparingly. Saccharine has not the food value of sugar, but should be used when the latter is not well borne.

Spices and *pepper*, in fact all condiments, should be avoided. Very small amounts of salt retard digestion, assimilation and nutrition, giving rise to deleterious substances in the blood.

Individuality plays an important part in diet, even for those who are well. "What is one man's meat is another's poison." Some who read this book will be able to eat anything and everything as long as moderation is practised. Others will find that they do not bear well some of the foods advised. Where there is lack of appetite there is something wrong, not always directly physical, but due perhaps to sorrow, worry, excitement or fatigue affecting the organism. Where the appetite is capricious, it may have to be coaxed, but artificial excitants, such as relishes and wine, should be resorted to with caution. It is unfortunate for a woman who is not well to have to

oversee the preparation of food, as she is apt to lose her appetite before going to the table. Food should be palatably prepared and served in an appetising way.

Nuts.—Most of the edible nuts are poor in starch and sugar and rich in proteids and oils, some kinds yielding more than 50 per cent of the latter. Nuts are concentrated nutriment, yielding a high per cent of energy. It is obvious that, like cheese, they should not follow a full meal, after sufficient food has already been taken, though they may well constitute a definite part of the meal, unless oils and proteids are contraindicated. They are not indigestible when well masticated, and taken in proper amounts, unless the digestive powers are weakened or deranged. It is an advantage to have to pick the nuts out of the shells at the table, as there is thus less danger of overburdening the digestive organs with surplus. Chestnuts, unlike most of the other edible nuts, are starchy or carbohydrate, having comparatively low per cent of proteid and oils. When cooked or baked, they form in some countries an important article of food, taking the place of bread and potatoes.

Some persons do exceedingly well on a diet in which nuts are the principal article. In fact, a

diet of nuts, bread, vegetables, grains and fruits is recommended for some persons complaining of dizziness.

Mastication.—The importance of mastication of food and oral digestion promoting the assimilation and nutriment cannot be too much emphasised. Recent investigation shows that many of the foods which have been deemed very indigestible, are digestible if properly chewed. Poorly chewed foods overtax the stomach and intestines. Not only are the fibres of meats and the capsules of vegetables broken up by mastication, and thus more easily acted upon in the stomach and intestine, but the chewing influences the flow of the digestive juices. One well-known English authority on the heart makes the patient's ability to chew the index for giving solid food. Counting the number of times every mouthful is chewed, while valuable as giving emphasis to the importance of mastication, makes eating too laborious, whereas it should be a pleasure.

The amount of food should be in proportion to the exercise. If the activities are restricted, as they are for many of my readers, the diet should be curtailed accordingly. To "cut diet, cut work," should be added: cut work, cut diet. Age must also be considered in the regulation of diet.

The youth needs food for growth and development, as well as for sustenance, and is likely to be more active than an adult. The adult needs only enough food to maintain his body, the supply not exceeding the waste.

Radical changes in the diet of old people are usually unadvisable. That is, taking away all meats from a person who is accustomed to them, or making a sudden reduction in the amount of food, as with age there is likely to be a lowered vitality and diminished resistance already existing.

Liquids.—Pure water is the best thing to quench the thirst, and there is less danger of taking too much liquid, as is apt to be done when the drink has a pleasant taste or flavour.

Milk, called by various writers "a model food," "a complete food" or "a perfect food," seems to be all of these for the person who is suffering from an attack of cardiac exhaustion, who has been put to bed and whose digestive organs must for a time be spared as much as possible. How long it answers the needs of the body, and in what quantity it is to be taken, are matters to be determined for the individual by the attending physician.

Notwithstanding that, theoretically, milk is a

perfect food, having all the essential properties for nourishment in fair proportion, its proteid being non-putrefiable, its carbohydrates non-fermentable, its freedom from purins, its easily digested fats, which show it worthy of an important place in diet; as a rigid exclusive diet, it is not held as meeting perfectly the needs of the majority of persons for any length of time. About a gallon a day would be necessary to supply the tissues with adequate nutriment. Such an excess of fluid is not admissible in most cases, aside from the unwise exclusion of mastication and of the benefits of solid foods where they are well borne. Milk, however, is an important article of food, and especially for those who have heart trouble. The marked intolerance for milk which some persons show may be overcome by diluting the milk with some slightly charged water, or by decreasing the richness of the milk by skimming off part or all of the cream. In an acute attack of gout, a diet of bread and milk often promotes relief.

Coffee.—The worst thing about coffee is that it keeps the consumer from knowing when he is tired and when he is sleepy; it stimulates the fatigued brain and muscles to go on and demands from the heart undue exertion. It stands to reason that the heart which beats faster and oftener than the

normal rate, which has not sufficient time to recover itself, will eventually suffer weakness or exhaustion. The reserve force of the heart is thus often heavily drawn upon before the individual is aware or before he seeks advice. If he continue to use coffee after it is forbidden, he only cheats himself.

It is coffee as a beverage which is here considered, not as a medicinal drug, which should be prescribed when indicated. Coffee is classed as a toxin; it is apparent that it should find no place in the diet of one who is already suffering from toxic poison.

It is only when coffee is used in excess that the primary cause of toxic poison is traced to its use. Where, however, there is already toxic poison from infectious disease, from digestive or assimilative disturbance, the semi-daily or daily coffee is apt to be harmful, while chronic or acute poison from excessive indulgence is followed by morbid and not infrequently grave symptoms.

Functional heart troubles, the nervousness manifested in trembling, palpitation, etc., not uncommonly disappear with the discontinuance of coffee. It should be borne in mind that, while a cup of weak coffee is not as harmful as a cup of strong coffee, two cups of the former may be equally or

more hurtful than the latter, according to the total of hurtful properties ingested.

The dilution of coffee with milk and cream, which seems the least hurtful to the majority of persons, induces an attack of indigestion in some, who consequently must take it clear, if at all.

As to the oft repeated questions regarding the caffeine-free coffees now on the market, as to whether the caffeine has actually been removed and whether the beverage may be taken with impunity, I can but say that the caffeine is extracted to a minimum or inappreciable amount, that the beverage is far less exciting, but that as long as coffee is coffee it will retain harmful properties. If coffee is not to be entirely excluded, the next best thing is to have it in the least hurtful form.

A recent German writer calls attention to the fact that hot coffee is more likely to cause disturbance of the digestion and heart than cold coffee; that anæmic persons are known to bear cold coffee, where hot coffee produces an uncomfortable effect which is apparently due to the greater activity and escape of the volatile oil in the hot beverage. He thinks that the old German saying, " Kalter Kaffee macht schön "—" Cold coffee makes one beautiful "—has a great deal of truth in it. At least it does not seem to produce the bad com-

plexion and ill looks of the dyspeptics, who are accustomed to taking their coffee hot. The same writer claims that his tests indicate that when the accumulation of fat and of waste particles is thoroughly removed from the green beans by immersion in water at 150° or 160° Fahrenheit, and a process of brushing followed by ten minutes drying before roasting, that coffee becomes much less likely to give rise to disagreeable symptoms. He thinks that many of the heart disturbances held accountable for indigestion are, in all probability, the result rather than the cause of the trouble. After dinner there is a natural bodily relaxation, facilitating digestion and conserving circulation, which should not be fought off or counteracted by coffee. Coffee tends to prevent constipation, and hence its use in moderation may be permitted, where there is trouble of that kind. That coffee and caffeine are considered valuable medicinal drugs has nothing to do with the question of coffee as a beverage. Strychnine and morphine have also therapeutic value, but it does not follow that they are to be taken daily or at any time not indicated by some abnormal bodily condition.

Tea, like coffee, has a direct as well as indirect effect on the heart. It is also, like coffee, toxic. Tea-poisoning is much more common in England

than in America or Germany, where coffee is held in greater favour. Tea, too, is the morning beverage, taken often on an empty stomach, quickly absorbed and poisoning the tissues. Like coffee, it contains caffeine, but, unlike coffee, it has a tendency to constipate and may start a train of ills in this way, acting and reacting on all the vital organs and the nerves. Tea not uncommonly causes flatulence and distention. Tea, when allowable, should not be permitted to stand on the leaves more than three minutes before it is used, otherwise the tannic acid may have to be reckoned with. Many persons become so dependent on the accustomed coffee or tea in the morning that, if deprived entirely of such beverage, they lose their appetite for food and begin the day badly equipped. In such cases it may seem best to permit the morning cup.

Water at Meals.—Although recent tests show that water at meals, when not taken to wash down food, tends rather to promote than disturb the digestion of normal persons; those who have heart trouble will do well to drink in moderation. As to the taking of fluids generally there can be no hard or fast rule, for each person is more or less a law unto himself, and the intake of fluids in each particular case must be regulated accord-

ing to the conditions present. Highly charged waters at the table should be sparingly indulged in, if at all, for the reason that the gases may distend the stomach and cause pressure on the weakened heart. On the other hand, they sometimes aid digestion and prevent formation of gases in the stomach. If plain water is taken at the table the quantity should not exceed ten ounces. Where there is any digestive trouble, no fluids should be taken at the table or for about an hour after the meal. Drinking-water should not be ice-cold.

Alcohol.—It is my custom, and that of most practitioners to-day, to interdict all alcoholic drinks for such very good reason as that given by Sir John Broadbent in his treatise on the heart in speaking of alcoholic drinks: "Their effects as excitants of the heart may, to some extent, be neutralised by the relaxation of the peripheral vessels which they induce, but their general tendency is to interfere with due metabolism and elimination and to bring about degeneration of structure." The drinking of any kind of alcoholics, where there is heart or blood-vessel disease, should be prohibited. It is only when such stimulant is indicated that alcohol is permissible, and in many of these cases I have found other stimulants more

active and reliable and hence to be preferred to alcohol. The physiological reason for here advising against the use of alcohol is, that, although the whiskies, brandies and spirits contain almost no purins, they, even in small amounts, inhibit purin metabolism, while beer, ale, porter and stout all contain purins and should, therefore, not be used by persons already suffering from auto-intoxication. In a great many cases the beginnings and the aggravation of arterio-sclerosis are ascribed to habitual alcohol. Alcohol, acting directly on the heart, is a frequent source of heart irritability and nervousness. The excessive use of alcohol tends to an increase of bodily weight, with overtaxing of heart and often encroachment on that organ.

VEGETARIANISM is, and must obviously always remain, a question of individual taste. Numerous experts show that universal vegetarianism under our present conditions is not feasible. The question whether the earth is capable of producing sufficient vegetable albumen to supply the human family may be left to the statistician. All proteid substances, whether animal or vegetable, must in the process of metabolism in the body be broken up, forming new compounds before they can enter into or form part of the body tissues. As the

body tissues show no selective affinity for the compounds derived from animal or vegetable proteids, reasoning chemically, the body should be as well nourished with a vegetable diet as with an animal diet. Reasoning practically, this is also true for at least some persons. As the heart or blood vessels have no direct connection with the æsthetic tastes of their host, whether it is the thought of the slaughtered animal that prevents his enjoying a porterhouse or the "national bird" on Thanksgiving, matters little to these organs. If the nutritive elements are sufficient and in proper relative proportion for the construction of the body tissues, these organs will perform their normal physiological function, regardless of whether the nutrient elements be derived from animal or vegetable sources. These elements are broken up into amino-acid and form the "building stones" for the body tissues. The principal substances forming the food of man are made up of proteids, fats and carbohydrates, and the relative proper proportions are best obtained by the judicious use of a mixed diet composed of vegetables, fruits and meats.

Meats are rich in protein substances, widely blamed for the purin bodies and most of the deleterious or poisonous elements found in condi-

tions of auto-intoxication, in gout, in rheumatism and in most cases of arterio-sclerosis. For this reason the meats are somewhat, or much, restricted in the diet. For the same reason meats are often restricted in perfectly healthy persons, who have large appetites; for in satisfying these appetites they consume a quantity of meat which furnishes an over-supply of proteins, manufacturing in the system poisons almost sure to bring about diseased conditions. Physicians find that many persons do not do well on a vegetarian diet. The most logical claim thus far made for a vegetarian diet is that it fills the stomach and satisfies the craving of hunger without introducing an excess of nutrient substances into the system. Vegetable foods are poor in fats and comparatively poor in proteins, their carbohydrates enclosed in more or less insoluble cellulose envelopes which are only partially digested or assimilated in the human alimentary canal. This furnishes the physiological reasons for a vegetable diet being often prescribed in cases of obesity, when such condition is accompanied by—as is often the case—a very vigorous appetite. The majority of cases of obesity are due to malassimilation, and as such should be treated by correcting the diet. The first effort in this direction is to reduce the amount

of fats in meats, gravies, soups, sauces, butter, cream, etc. If meats are admitted in the diet of such a person they should be very lean and only a small portion once a day, preferably at the midday meal.

To take up the special diets in specific diseases of heart or blood vessels is not my purpose. Indeed it would not be within the province of a work of this kind. There are, however, some general dietary rules that should be observed, particularly in rheumatism, gout, hardening of the arteries and auto-intoxication, troubles which are concomitant with heart trouble. The first and most imperative dietary rule is moderation. The hearty meal at or about midday at which meat may be eaten, the choice of beef, poultry, mutton, veal, etc., may be left to the taste. Often it is necessary for patients suffering from the above troubles to be prohibited all meats,—that an absolutely meat-free diet be adopted. Gout and rheumatism are variable diseases, each presenting idiosyncrasies that call for special attention, the treatment in all these cases requiring individualisation. As the question of diet in the treatment of these troubles is of paramount importance, I will mention a few of the articles which should be strictly forbidden: sweetbreads, kidneys, liver, beefsteak, venison,

jam, meat extracts, pickled and canned meats. Boiled meats are better than meats roasted or grilled, the boiling removing much of the toxic substances contained in the meat fibre. In general, the purin-free foods are milk, cheese, cream, butter, eggs, bread, fruits, vegetables with the exception of beans, oatmeal, peas and pea meal and asparagus.

Recent experiments in Germany show what a vast economy may be expected in the near future in the upkeep of the body nourishment. The conditions now arising all over the world, increasing the cost of living by leaps and bounds, will naturally interest social economists in these experiments. Indeed it is surprising, with all this human cry of high cost of living, that we have neglected this subject so long. When we consider what a large per cent of the income of the masses is expended in upkeep of the body and what a tremendous waste is found in this item of expenditure, it gives one the feeling that here is a vast field for practical missionary work. These experiments not only point to vast possibilities in monetary economy, but also by synthesis have shown that the animal tissues may be fully nourished at a much less expense of wear and tear to the digestive organs in the process of metabolism.

The two factors controlling the weekly or daily diet of most families are the weekly allowance and personal taste. Families with modest incomes will indulge in the most wanton extravagance in the matter of food, not particularly in buying the most expensive delicacies, but in selecting foods which appeal to the taste, many of which have almost no nutrient value. A thrifty housewife who will with the greatest assiduity study the efficiency and durability relative to the economic value of every staple commodity that enters her household, will make no effort to learn the caloric values of the food she purchases for her family. She is governed in her selections by the taste of the different members of the family, or by the price of the article in question, and congratulates herself on being very particular when she insists on the meats, cereals, fruits, and vegetables, which she chooses, being fresh and free from decay. These are superficial attributes, as compared with the real unit of efficiency, which can only be estimated by the allowance of gross waste for each food and the net nutrient value, or units of calories, received for the money invested. Dietetic economics for practical purposes is not a difficult study, one of which indeed the average housewife may get a comprehensive knowledge in a short time.

In the very near future, every city and town, it is hoped, will have a pure food society organised by the best people of the community for the determination of having better and purer food for their families. They will not only demand full legal weights and measurements, but will force tradesmen to give some evidence of the quality and nutrient value of their purchases. By very little study, every mother or head of a household may learn the nutrient value of the food she may select for her day's menu. The nutrition experts in the government laboratories at Washington are constantly issuing scientific reports on this subject, which may be had for the asking. They are also ready and willing to give gratis expert advice on the calories or nutritive value of all of the foods in everyday use. With the co-operation of the local physicians, which I am sure would be easily obtained, as would also the local press, such a society would be of inestimable value to every community, in providing families much more economically with better and purer foods, those which yield energy, health and greater usefulness.

BODILY WASTE

WHENEVER there is retention of bodily waste, whenever the elimination of waste is out of normal proportion to the intake, great varieties of troubles affecting the heart and arteries, directly or indirectly, arise. First to be considered is constipation, so closely associated with poisons in the blood. Constipation is induced by sedentary habits, while daily exercise favours the emptying of the bowels. Irregularity in going to the closet induces retention, while the establishment of regularity tends to overcome it. The diet should be mixed with a preponderance of laxative foods, such as vegetables, ripe fruits, stewed fruits, with a variety of breads, brown and white, coarse and fine, while strong tea, chocolate, cocoa, fresh breads, unripe bananas should be avoided by one who already has an accumulation of poisons in his system. Straining at the stool is hurtful. Morning tea on an empty stomach is to be avoided. Some hot or cool water, slowly sipped, is beneficial. Creams, sour milk, are commended. Exposure to cold and wet, improper clothing, sleeping in ill-

ventilated rooms, insufficient or injudicious bathing induce or favour constipation. The skin, the kidneys and the lungs, also outlets of the body waste, should be given favourable conditions to enable them to perform adequately their functions. Massage and proper baths often give relief from habitual constipation and promote bodily elimination. Thick milk, buttermilk, the various Metchnikoff lactics, such as Yoghurt, are also endorsed as giving relief from constipation and counteracting the bacterial poisons. It should be remembered, however, that these milks have great food value, and if added to an already liberal diet may give an excess of food.

BATHS

BATHS, as commonly considered in relation to the well-being of man, are for cleansing purposes, or for therapeutic purposes, or for both. As the first, they are essential to the health of the individual; as the second, they are valuable agents. The physician who has made careful study of the action of baths in health and in disease, who has observed their effects on hundreds or even thousands of patients; who knows, from his own experience or from the writings of scientific investigators, that baths, plain or mineral, hot or cold, have a remarkable effect for good or ill, will warn the patient against indiscriminate bathing for cleansing purposes, and doubly warn him in prescribing for himself a course of medicinal baths, or of taking such a course at any time without the supervision of a physician. Persons who would not think of taking a course of drugs without advice, take a course of baths, quite as potent measures for good or ill, entirely unaware of the great risk they run. My opinion is that a great many normal persons reduce their vitality by mistakes in their cleansing baths, and I am perfectly

sure that many who have diseases of the heart or arteries do themselves positive harm. In the absence of advice, for the person whose vitality is much reduced or whose symptoms are of a serious nature, the sponge bath, with quick application of a warm towel, seems the safest cleansing method. If, however, the bath is to be taken in the tub, it should be borne in mind that the depth of the water and the temperature of the bath are of great importance. The half bath, reaching to the waist-line, the three-quarter bath to the nipple-line, the full bath, covering the entire thorax, having different degrees of influence on the body, the half bath the least, the full bath the most, while the safest range of temperature is between 92° and 94° Fahrenheit—that of the tepid bath. Any modification of temperature above or below this range becomes, for the individual who has heart trouble, either a therapeutic bath, which ought to be prescribed in view of a certain diseased condition, or a dangerous risk. The duration of the cleansing plain water bath should not be more than two or three minutes, the temperature of the room ranging never more than a few degrees from that of the bath, the body dried without delay.

As in the majority of cases the peripheral

capillaries are congested, the elimination of waste matter through the skin sluggish, it is very important that the skin be kept clean and as vigorous as possible.

It should be clearly understood that the cold bath is of service in only very special conditions. Many persons do themselves great harm by taking cold baths entirely unsuitable or positively contraindicated by their condition. The cold bath constricts temporarily the blood vessels, slows the heart's action, raises the blood pressure and causes additional work for the heart in consequence of the additional force it must use to overcome the extra resistance in the constricted blood vessels. Generally speaking, persons with high blood-pressure symptoms should avoid cold baths and those suffering from kidney disturbance should do likewise. Patients with weak heart should not indulge in cold baths on account of the sudden extra work put upon the heart by the abrupt increased resistance of the constricted vessels, which the heart must overcome for sufficient blood to reach the different tissues of the body. No one should take cold baths who does not react well after them. Cold baths, if permitted, should be immediately followed by a brisk rub with a rather coarse towel, and, better, a coarse hot towel.

A bath with a temperature of 95° Fahrenheit and upward is considered a warm bath. The action of this bath is to dilate the skin capillaries, the peripheral vessels, reduce blood pressure, quicken the pulse rate; it relieves the work of the heart by lessening the resistance against which the heart must pump the blood to the organs of the body. The tepid bath is considered the neutral zone of temperature at which the body receives neither the physiological action of heat or cold, which in a plain water bath is 92° to 94° Fahrenheit. This is the safest bath for cleansing purposes, as it has a minimum action on the heart and blood vessels and is more cleansing than the cold bath. Since marked action on the heart and blood vessels is produced by cold or hot baths, it is apparent that irreparable harm may be done where they are not judiciously regulated and indicated by careful medical examinations. Baths should not be taken when the stomach is full or during active process of digestion. This is an imperative rule, particularly with the cold bath. This same rule pertains to the administration of the douche bath as well, and should be a warning to those taking a cold douche while the body is warm, as after exercise.

Sea bathing is very refreshing and stimulating,

the salt, the constant motion of the waters and temperature all adding to the stimulating effect of this form of bath. The activity of this bath is such that it should not be taken by the individual before he has had the assurance that there is nothing in his physical condition which contraindicates such stimulation.

Another general rule regarding baths is that after any bath one should rest for at least a few minutes. If the bath be tepid or cold he should rest (better in the recumbent position) long enough for the system to recover from the stimulation, the time of rest being in proportion to the stimulation. After a warm bath the rest should be longer, as the capillaries of the skin, being extremely dilated, require longer to recover their equilibrium, and this is particularly true if the surrounding atmosphere be cold, as naturally the greater the contrast the greater the danger of bad results. The warm bath is very relaxing, and for this reason the cold douche is sometimes recommended immediately following a warm bath. For the person who is below normal, or for the fairly normal one, who does not react well, it had better be avoided, unless advised. The sea salt added to the plain water bath at home affords an extra stimulus to

the system that is often very beneficial where such stimulation is needed.

The Turkish and Russian baths are entirely too vigorous for four-fifths of those who take them and should never be taken without medical advice. Notwithstanding my great faith in baths as a valuable therapeutic measure, particularly for affections of the heart and blood vessels, I should not think it safe to give general directions to the laity, or to recommend such treatment indiscriminately. Many people look upon water as harmless or neutral. Plain water, internally or externally applied, may be beneficial, may be neutral or hurtful, according to temperature, quantity and the condition of the subject. When the question is one of mineral water the range of potency for good or evil is greatly increased.

The carbonic acid brine bath has become a well-recognised treatment in almost all kinds of chronic heart and blood-vessel diseases. This form of bath has a direct action on the heart and blood vessels. It has a stimulating effect on all the glands of the body, therefore increasing elimination of toxins from the system, improving in many cases blood pressure, relieving the weakened heart and quieting the nerves. Carbonic acid saline baths offer a hope in heart dis-

eases and rheumatism when other measures are useless. The carbonic acid bath tends to stimulate all the organs of elimination, particularly the liver, either directly or by relieving the congestion which prevents the organs from performing their functions normally, the increased elimination producing a beneficial effect either directly or indirectly on the heart, for in most instances there is a damming up in the system of the waste or poisonous products from lack of elimination. Plain baths will have this action to a certain extent, but the effect is only transitory, while the action of the carbonic acid baths is in most cases more constant and very much more permanent.

SLEEP

SLEEPLESSNESS is often concurrent with heart trouble, sometimes as a consequence of the latter, but as often as a forerunner of the same. The very worry, sorrow, overwork or overstimulation which produced the insomnia may have been, and continue to be, an important causal factor of the disturbed circulation or cardiac insufficiency. Although the heart is active throughout the night, a time of rest for mind and body is necessary for the building up of the tissues, even of the tissues of the heart itself; for the repair of waste of the body, and of the wear and tear of the day. It is easily seen how important it is that all the conditions for sleep be made as favourable as possible, especially for the person whose heart is obliged to do extra work, in order to keep up the circulation sufficiently to nourish the body, and, in addition, perhaps, make compensation for some defect brought about by previous overstrain, infectious disease or other cause.

The first and many times the impossible thing to do is to exclude cares and worries from the

chamber at bedtime. The patient and those about him, however, should remember its importance and make every effort in that direction. With some men and women it has become a habit to plan, after they go to bed, their work or social engagements for the next day. The lawyer thinks out his speech; the business man reviews the transactions of the day or speculates on those of the morrow, while his wife anticipates or reviews her domestic cares, or plans her social entertainments or thinks too intently about her paper at the club. Wakefulness brought about by this procedure *can* and *ought* to be stopped, by proper effort.

The mind at bedtime should be kept as passive as possible. Every exciting thought should be banished, hence the efficacy of the popular prescription of counting sheep jumping over a fence or the more monotonous recitation of the alphabet. The husband and wife who have had a common sorrow or living sorrow are very likely to fall into the reminiscent brooding mood at bedtime. Let me ask the one who is well to help the other to dwell on cheerful but not exciting subjects at the close of the day.

Active brain work should be given up an hour before bedtime, even if it be but the reading of a book of essays or history which requires con-

stant concentration, attention and thought. Exciting stories late in the day should be avoided; also games of cards which over-excite or require close attention. Some light, pleasant reading, neither taxing nor exciting, may prove beneficial.

Regularity in going to bed, in doing all he can to form the habit of sleep, becomes a cardinal virtue for the person whose heart is affected. Too much importance cannot be given to exercise, air and light, all conducive to sleep. Exercise should not be indulged in to excess or to the point of fatigue. Over-fatigue or active exercise late in the day is likely to produce wakefulness. Sunlight in the daytime, though not in excess, is good for the body and the mind, dispelling gloomy thoughts and depressing apprehensions. Fresh air at night, as well as in the daytime, should be provided, avoiding a direct current over the bed.

There should be a thermometer in every bedroom, especially when the occupant is not in a normal state of health. The patient should be warm enough for comfort, whether he sleep outdoors or in, as his sleep will otherwise be restless. Needless to say, the bed should be good, long enough, wide enough and just that degree of hardness or softness which the individual may

prefer. Special conditions may indicate that the head should be higher or lower than custom, affording more comfort and facilitating the heart action, or that the centre of circulative pressure be changed by raising slightly the foot of the bed, thus counteracting a condition of sleeplessness, as is sometimes determined by the individual himself.

His pillow should be right, the size he likes, with the proper degree of softness, by which I mean the kind of pillow he finds comfortable, not one with special soporific qualities, like that of King George the Third, which was filled with freshly dried hops, claimed to have special virtue for the uneasy head of him who wore a crown. It scarcely seems necessary to say that the heart patient should have a bed to himself, as should every one, whether well or ill. The matter of bedclothes should be looked after, that they be sufficient, but not too many or too heavy. Many men, especially those living in hotels, get into beds just as they are, without a thought about what may be the proper amount of covering for the temperature of the room, the climate or their own peculiar needs. The covers should be well tucked in, that they may not slip from the bed and thus disturb the rest of the person who in reaching for them all night, gets up in the morning tired and

perhaps cold. Very often wakefulness is caused or exaggerated by some such simple thing.

Insomnia is often traced to late dinners or overeating. Not infrequently, however, it is due to hunger or lack of assimilation. Such persons find that a bite of something to eat before going to bed or a biscuit in the night, or a little milk, if it be not excluded from the diet, is conducive to sleep.

Coffee, tea, alcohol, smoking must be abstained from in the evening, if not at all times, by the person who suffers from disturbance of the heart, as I have said elsewhere. The man who does not believe this, who thinks his habitual cup of coffee or his cigar after dinner has nothing to do with his wakefulness, because he does not lie awake every night after such indulgence, has only to try drinking the second cup of coffee, or to smoke an extra cigar in the evening, to have a long wretched night in which to meditate over his folly.

Nervous persons, or those who become easily fatigued, should sleep a half-hour in the afternoon. My experience has been that, instead of interfering with the patient's sleep at night, the afternoon siesta is conducive to his better rest.

Whatever else he does, he should not take sleeping powders or sleeping potions of his own

accord. The taking of them is attended with too much risk, especially where the heart is not normal. The physician may find that for a particular case the sleeping drops are less harmful than the wakeful nights, but the physician is the one who must decide in such cases and watch that the patient does not grow to depend upon them.

The patient who has his emergency prescription renewed for months or years afterwards, does not cheat his physician half as much as he does himself.

Persons with different temperaments and different conditions of health require varying amounts of sleep. There is not much danger of overindulgence in sleep for the adult person who suffers from heart disease, or from disease of the blood vessels, the difficulty in the majority of cases being to overcome undue wakefulness. In most instances, the practice of " early to bed and early to rise " gives the best promise of health, if not of wealth and wisdom.

HABIT

HABIT, instead of being what the Latin derivation implies: action or condition which the individual has or which he has a tendency toward, is often an action or condition which has the individual. Habit is more than second nature—it is, as some one has so well said: "ten times nature." Although habits, generally speaking, include virtues, as well as vices, we will concern ourselves here only with those hurtful to man and most potent in causing or aggravating heart trouble. Of the insidious habits which seriously affect the heart and blood vessels, the use of tobacco is by far the most frequent and dangerous. It is the most frequent and dangerous because it is a habit formed in early youth when the tissues of the developing boy are in a transitory stage, needing all the vitality possible for the building-up process. It is then the youth is most susceptible to intoxication, for tobacco, as well as whisky, intoxicates. Much damage is likely to be done to the muscular fibre, to the heart wall and vessel walls of the youth who uses tobacco. I am satisfied that the insidious nicotine plays an important rôle in the

premature degenerative changes found in early adolescence and in middle life.

Some patients show a total disregard for advice, refusing to be convinced of the harmful nature of their habits. They are not willing to accept the judgment and experience of men who make a study of the causes and effects of disease. They remind me of a certain German servant girl, who, having spilt gasoline on her clothing, was warned by her mistress not to go near an open fire, and told of the inflammable, combustible nature of gasoline and the danger involved. The girl, on whose face a very incredulous expression played, disappeared from the room, as her mistress supposed, to change her dress. In a few minutes, however, she returned with a triumphant look, to say that she had put fuel on the kitchen fire, having proved thus to her own satisfaction, since she had neither taken fire nor blown up, that her mistress was mistaken about gasoline's dangerous properties.

The discontinuance of tobacco, unless too much damage has already been done, will make a favourable change in the blood pressure and lead to a disappearance of palpitation and other annoying symptoms. Where the impairment of the heart is from other causes, the individual, be he

young or old, will aggravate his trouble and be likely to suffer from intense irritability of the heart, if he persist in the indulgence of tobacco.

To our women let me say, before it is too late: "Would that you might see in the health resorts of Europe the hundreds of women, habitual smokers, who come from the countries where such is the custom, struggling to free themselves from the habit, seeking health which they sacrificed so thoughtlessly!"

Every physician recognises the great advantage possessed by the person who has never been a victim to vitiating habits when such a one is called on to meet a physical crisis, such as an operation or when he is seized with penumonia, typhoid or any of the very debilitating acute diseases.

If the patient has never indulged in habits which keep the system below the normal point of resistant force, there is a good mark in his favour for the chances of withstanding the severe strain put on the system.

It is said that we should all die from tuberculosis if we did not possess within us a resistant force sufficient to overcome the infection to which we are all at some time in life exposed.

Why then dissipate this force which may be needed any day?

The Oriental who pays the physician to keep the family well and stops his salary when sickness invades the household, is not to be laughed at. The medical profession of the civilised countries to-day stands for preventive medicine.

The American Medical Association sends out lecturers to educate the people and to solicit the co-operation of the public in the prevention of disease. This does not free the individual physician, who is a member of the association, from his duty to his patients and the community in which he lives. Neither has he discharged his whole duty when he destroys disease-producing germs or prevents their inoculation. He should use his influence and employ every rational means to prevent the younger generation from forming habits which will surely weaken or destroy their natural resistance to disease. Parents are largely responsible for the promiscuous tea and coffee habit in youths.

A growing child needs no stimulant further than good, nutritious food, and when such an active stimulant carrying as much poison as either of the above is allowed, it is capable of doing positive harm. Parents who would shudder at the thought of their children's drinking whiskey, will pour coffee and tea into their stomachs in

quantities sufficient to overstimulate and spoil the digestion of any child.

Among the English, who are addicted to strong tea, tea poisoning with disturbed heart function is very common, while in Germany and America the bad effects of coffee are much more general. In Germany, especially among the students, the impaired hearts are often due to beer, the constant or excessive use of which poisons the blood and diminishes the power of the heart to carry on its function.

Every one knows among his acquaintances or friends men or women who have freely indulged in these beverages for years, without any apparent harm to health, but these persons are the exception rather than the rule, and no proof that the habitual use of these beverages is not hurtful.

The misuse of alcoholic beverages is a very potent cause of diseases of the heart and blood vessels. It is a well-recognised fact that the pernicious habit of taking whiskey highballs and nightcaps has doomed many an otherwise strong man to premature heart failure. Alcohol in any form is an active heart stimulant, and should be used only under the direct order of the physician. It is an irritant to the vascular walls and increases the hypertension in the blood vessels. By this

increase of tension in the vessels and by its stimulating toxic products, it very frequently causes Bright's disease or interstitial nephritis. Alcohol also causes changes in the liver which, sooner or later, produce a diseased liver, known as hobnail liver, or tippler's liver.

The heart specialist is constantly meeting these pathological conditions in these two organs, as a result of changes in the blood vessels supplying them. Any one doubting the soundness or urgency of this doctrine need only turn to medical books on heart diseases to see what an important place the first authorities give to intoxicating drinks as the cause of cardio-vascular diseases.

The evil results of the habit of bolting food and of overeating are discussed in another chapter.

THE HEART AND CIRCULATION

To the reader who has been patient or interested enough to read the preceding pages, I am ready to confess some stratagem or design in having placed this chapter here instead of at the beginning of the book, where it would seem to belong. It was because I feared the reader would never go farther than the first chapter, or perhaps the first paragraph, recalling his schooldays and the dead bones of anatomy, the perplexities of physiology which he had to crawl over or seek his way through, arriving at hygiene in too exhausted or in too dulled a state of mind to take any interest in "How not to get tired" and "How to keep well and strong." The person who writes for the public is reluctant to use the terms "anatomy" and "physiology," fearing that his book will be abruptly closed. Hence it is that I have endeavoured to remove the stumbling blocks from the doorway of the unnamed Hygiene, that her suggestions for the preservation and restoration of health may seem less difficult to obtain.

Many of my readers, engrossed in the current affairs of life for many years, have forgotten much of their physiology, particularly that part which pertains to the heart and blood vessels. That the reader may the more easily understand the pathological conditions, the disordered functions mentioned in the subsequent chapters, it is essential that careful thought be given this chapter on the physiology of the heart and blood vessels, that a fair understanding of the normal functions be had in dealing with the variations from the normal.

Circulation of the blood is a metaphorical phrase, and means that the blood, so long as it remains in the vessels, moves along a tortuous path in a definite direction and returns to a given point. Should we now follow a certain particle of blood, we find it leaving the heart during the contraction, entering the great vessels, aorta or pulmonary vessels, which soon divide and subdivide, until the collective dimension of their lumen far exceeds the size of the vessels leaving the heart. Consequently we find the blood current correspondingly slower. As the blood path widens, naturally the speed of the current is slower. The blood corpuscle passes out into the smaller vessels, into the very small arteries, thence into the capillaries, and

it is in the capillaries that all the functions of the blood are performed. It is here the blood reaches the ultimate tissues, to supply them with the nutriment brought from the alimentary canal. By the process known as chemical affinity, the tissues are able to extract from the blood stream in the capillaries through their extremely thin membranous walls all the elements necessary to their maintenance, and give off the waste matter which they can no longer use. This interchange is called osmosis, and is the essential act in the process of assimilation. The building up or construction of tissue, is known as anabolism; the tearing down, or destruction, is known as katabolism, both processes constituting metabolism, a physiological function, in constant progress in all animal tissue.

The blood is usually called the nutritive fluid of the body. Its functions may be more explicitly stated as follows: It carries to the tissues foodstuffs after they have been properly prepared by the digestive organs; it transports to the tissues oxygen absorbed from the air in the lungs; it carries off from the tissues waste products formed from the processes of disassimilation; it is the medium for the transmission of the internal secretions of certain glands, and it aids in equalising

the temperature and water contents of the body. The blood of the body is contained in a practically closed system of tubes, the blood vessels, and is kept moving always in a definite direction, and never in the reverse, by the forces of the heart's contraction. To a study of these elastic tubes let us now turn.

The heart is a muscle, a hollow organ comprising four compartments, with a partition running up and down in the middle, dividing the organ into right and left hearts, practically making two distinct organs which work in unison. The right heart and the left heart are again divided into two chambers, the upper and lower, the upper cavity called an auricle, from its resemblance to a dog's ear; the lower cavity called the ventricle, the real pump that forces the blood out into the arteries, the capillaries and veins. The auricle acts as a receptacle for receiving the blood from the veins, and retains it, until the ventricle is ready to receive it. Between the auricle and the ventricle there are little flaps of tissue, called valves, which act to close up the aperture between the two chambers. These valves are called the auricular-ventricular valves. These valves are anchored by very fine but very strong tendons, which enable them to open and close with rhythmical

precision, each time the heart beats. The function of these valves is to guard the opening from the auricle into the ventricle, and prevent the blood from returning into the auricle from the ventricle when the ventricle contracts. The muscular walls of the ventricle are very thick and firm and have great power. The force exerted at each contraction must naturally be very great to drive the blood out into the most distant parts of the body and into the smallest vessels. It is obvious that at each forceful contraction of the ventricles there is a powerful pressure against these valves, the strain of which, under normal conditions, or within physiological conditions, they are able to withstand. If there occurs an inflammation of these valves, the frequent result is a slight contraction, a thickening or shortening of the valves, which prevents their coming completely together, and in consequence the blood returns into the auricle at each contraction of the ventricle. This condition is spoken of as a "leaky valve," or "leaky heart," or valvular insufficiency, or valvular stenosis. A leaky heart may also come from other causes, which will be considered later on.

The auricle has a double function; it is a reservoir for the blood, and by its contraction assists

in charging the ventricle with blood. These contractions are called systoles, and the auricular systole is necessarily followed after a very slight pause by the ventricular systole. These systoles make up the heart beat, and each heart beat causes the pulse wave felt at the radial or wrist artery. The ventricles, as we have seen, are the two lower chambers of the right and left heart and are the real pumping apparatus of the heart. The left ventricle is close to the chest wall, the base being almost in the median line of the breast bone, pointing downward and outward toward the left arm, the apex almost in contact with the chest wall, on a line with and just below the nipple in the fourth intercostal space.

The right ventricle is to the right and behind the left ventricle and presents very little surface to the chest wall. The contractions, or systoles, of the two ventricles are synchronous, the right forcing the blood into the lungs, to be aërated or oxygenated, while the left ventricle pumps the blood into all the other parts of the body; hence this is called the systemic circulation, while the right ventricle pumps into the pulmonary circulation. The systemic circulation being infinitely greater, taking in, as it does, the entire anatomy, furnishing blood

to the ultimate tissues of the body, must naturally have a much greater pumping force behind it than is found in the pulmonary system. Thus the left ventricular wall is found very thick and firm, oftentimes two or three times thicker than the walls of the right ventricle.

In estimating the work done by the heart in maintaining the circulation, we must depend on the uncertain though important quantity of pulse volume and upon the force with which each ventricle ejects the pulse volume, or blood wave. A small fraction of this force is expended in imparting a certain velocity to the ejected blood, the rest serving to overcome a number of opposing forces which we shall study under "blood pressure."

It is not necessary for our purpose to describe all the events that occur in the cardiac cycle, or all the events that go to make up the heart beat; sufficient for us is to know of the "period of reception of blood," when the valves between the auricles and ventricles are open and the ventricles are filling, and the "period of ejection," when the auriculo-ventricular valves are closed and the pulmonary valves are open, which is the ventricular systole when the blood is forced out of the heart into the arteries, constituting what is known

as the systole, or heart beat. As soon as the ventricles have emptied themselves, the walls relax, constituting the diastole, with its period of rest for the muscular walls of the ventricles, and it is in this way alone, between each beat, that the heart takes the only rest it ever gets. One realises the importance of the diastole when he learns that this is the only rest the muscles of the heart get during life. Hence, the diastole is called the compensatory pause, for it is during that short interval, or pause, that the muscle tissue must acquire the energy for the succeeding systole or beat.

To understand the physiological function of the arteries, it is first necessary to get some idea of their anatomical structure. Arteries have in general three coats, made up of muscular fibres, elastic tissue and the internal coat made up of serous tissue. This combination admits of strength and resiliency, necessary for the proper function of the vessels.

We see, from the anatomy of the blood vessels, that they are so constructed as to favour the work of the heart in maintaining the circulation. In facilitating the work of the heart, the elastic fibres of the vessels play an important rôle. Any condition which diminishes the resiliency of the vessel

wall naturally causes a disturbance in the fine adjustment of the circulation between the heart and vessels, in consequence of which the work of the heart is very much increased, or the ordinary work becomes out of proportion to its already much exhausted power.

BLOOD PRESSURE

BLOOD PRESSURE, as the term implies, is the pressure of the flowing blood in the blood vessels, maintained, to a normal or abnormal standard, by the pumping of the heart, by the quality of the blood and by the condition and elastic response of the tubes through which it passes;—the former when the three essential factors are normal, abnormal when one, two or all of the three factors are deficient, unless such deficiency of the one be counteracted or compensated by another. As long as the circulation is kept up, there is pressure of some kind. It is only when it rises above the normal or falls below the same that it is a matter deserving attention. A deviation from normal blood pressure either indicates something wrong or that it is the natural consequence of age. Which it is and to what it is due should, if possible, be ascertained. It should be borne in mind that high blood pressure or low blood pressure is no more a disease than is a pain, but like pain it is a manifestation or result of some derangement.

When the warning bell of high blood pressure

is heard the pedestrian had better stand still until the fast train goes by. Many a foolish fellow has lost his "precious minutes" with his life in trying to rush across the track after the sounding of the danger signal. In many instances all that is necessary is for the individual to stand still for a few moments of his life or to slacken his pace for a while, in order that he may go on for years at a good ordinary rate.

The deviation from the normal blood pressure is an important symptom in diagnosis. The object in treatment is not to reduce or eradicate the symptoms, but to ascertain and attack the cause. Many times, especially if the abnormal pressure be of long standing, it is unadvisable to make any but a very gradual change in the resistance or accustomed pressure. If there are poisons in the system from bacterial diseases, from faulty diet, poor assimilation or from insufficient elimination, judicious measures should be employed to correct the condition. The capillaries and arteries contract to protect themselves and the tissues from poisons in the blood. Not only is the work of the vessels thus increased, but the heart has a greater resistant force to overcome, to send nourishment to the tissues.

Chilling of the skin or exposure to sudden cold

congesting the peripheral capillaries, changes the resistance, at least temporarily, aggravating or causing a change in pressure. If there be any thickening or clogging of the pipes, the heart again tries to adjust itself to the deviation, and a change of pressure may be detected.

The heart itself may be embarrassed by an ill-nourished or dilated muscle, by a strain or defect, which also may make a difference in its pumping force. Excitement, high tension, worry and sorrow, unfortunately in many cases not to be eradicated, exercise a powerful nervous influence on the organs, overworking or depressing them in their activities.

The individual should know that his high or low blood pressure is a sign of some circulatory disturbance, that it may point to a trivial deviation from the normal or to a serious condition. In any case he should get the best possible interpretation of the sign, and plan his course of life or treatment accordingly. If it be unnecessary to circumscribe his activities to any great degree, he should know it, that he may not abandon his profession or business without good cause. Again, a person who is accustomed to an active life is apt to brood and do himself great harm if he give up all his business or social

interests, which should enter into the reckoning of radical changes. Moderation in everything may be all that is required. Sometimes, however, it is absolutely necessary that the individual drop everything for a time, and his outlook and future activities depend entirely on his so doing. Here again comes the importance of seeking and following medical advice.

ARTERIO-SCLEROSIS, OR HARDENING OF THE ARTERIES

HARDENING of the arteries, the term familiar to the laity for arterio-sclerosis, is very misleading and terrifying to some minds. Many accept the verdict of the physician's diagnosis as a hopeless sentence. They are worried and depressed, fancying that their blood vessels are turning to stone, petrifying slowly or rapidly, and that nothing can save them from this awful fate. In consequence, they brood, curb their activity to an unreasonable degree, and promote thereby the morbid or abnormal condition already existing. Others, believing their condition to be hopeless, try to forget, by plunging with renewed effort into business or society, by drinking or smoking, excesses which may in the beginning have induced the trouble, and which are sure to be promoting agents.

Still others are such slaves to habit, to business or society as to show a strange recklessness or indifference to their health, or inability to understand the import or gravity of their condition or of their heedless attitude. Bearing in mind

these different types of persons, with all the intermediate variations, who consult the heart specialist, I fully understand how difficult, if not impossible, it is to give the individual a proper view of his trouble and to win his willingness to regulate his mode of life, so as to give him a fair chance of living his full number of years. "Hardened" arteries, having usually a high tension, with increased blood pressure, are taut and cord-like rather than hard or rigid like a tube.

The arteries may be thickened temporarily or permanently, or they may be unduly contracted, without degeneration of the arterial coats or without calcareous infiltration, which is found in extreme cases, and not infrequently in the arteries of men who make their living by hard manual labour, such as miners, blacksmiths, or men who shovel, dig or hammer all day long.

"In my experience it is rare one finds in the well-to-do class calcareous changes in the vascular walls. These patients seldom have the brittle, calcareous arteries such as, in my clinical work in Berlin, I have found among the hand workers. We must recognise two forms of arterial degeneration; the first, and by far the most prevalent, among the well-to-do class of society, many of whom have a very highly developed nervous or-

ganisation, brought on by strenuous living, and a seeming inability to relax. These are the hypertension cases, and though we may find a fibrous degenerative thickening of the vascular walls, we seldom find a calcareous, brittle artery." *

While the normal elasticity of the vessels is likely to suffer diminution, it is most commonly not so reduced as to be unaffected by sane living and treatment. Hence the importance of heeding the early and blessed signals of warning, of removing as far as possible all causal or aggravating agents, before degeneration with its grave sequences takes place. The majority of patients have a favourable outlook if they are able or willing to follow advice and change their mode of life.

Thickened arteries, of such common occurrence, especially in men, are not necessarily permanently thickened, as various medical observers testify, while most sclerosed arteries retain a measure of elasticity. While no course of treatment will restore degenerated vessels, the strain upon them may be so diminished as to enable them to do their work, if the general constitution is good.

While an abnormal condition of the arteries

* "Carbonic Acid Baths in Treatment of Chronic Heart Diseases," by James Henry Honan, *Southern Medical Journal*, April, 1911.

seems, in many instances, directly traceable to toxins in the blood, there is a long list of inducing conditions directly or indirectly associated or causal, comprising typhoid, influenza, kidney disease, venereal disease, tonsilitis, a diseased condition of teeth or gums, lead or paint poisoning, gout, errors in diet, imperfect metabolism and elimination, over-exertion, prolonged strain physical or mental, irregular living, stress, sleeplessness, anxiety and worry, indulgence in alcohol, coffee, tea, tobacco, over some or many of which the individual himself has more or less control, the favourable or unfavourable forecast depending more upon himself than he is wont to believe. At least, in justice to himself, he should review the list, dwelling with serious thought upon every item, before dismissing it as something which concerns only the physician.

Where the direct cause is the evident outcome of excesses, overwork, injurious habits, no time should be lost in making corrections. Where it is still existing, as in an infectious or chronic disease, measures must be taken to combat the primary cause.

To many of my readers these diseases constitute a part of their past history, and it is the consequences and harmful and adverse influences rather

than the primary causes which must be considered. Whether the causes are evident or obscure, present or past, it is important that the individual adopt measures which alleviate or check the abnormal processes, instead of those which cause or aggravate.

1. The bodily intake and waste are of great importance, not infrequently the direct or indirect cause of the toxins or deleterious substances in the blood, causing the tightening up and thickening of the arteries or permanent changes in the same. The patient must eat and drink in moderation, though the diet may be liberal and varied. His diet should be simple and nourishing, meats being more or less restricted, while high game and all meat broths should be entirely prohibited.

Alcohol, coffee, tea and tobacco must be listed as harmful.

Constipation, with the retention and reabsorption of poisons by the system, is dangerous. Constipation may be more easily avoided or controlled by the individual than he is wont to think. It may be due entirely to his irregularity in going to the closet, to his effort to read the news of the world while there, to his haste or impatience, to errors in food or to lack of exercise.

No day should pass without an active movement of the bowels. Not only is the retention of waste matter hurtful, but the incidental straining at the stool increases the blood pressure and taxes the heart and arteries. Natural measures against constipation are preferable to artificial, though it is sometimes necessary to employ the latter for a while or periodically. Too frequent dependence on such means is to be avoided, as it is easy to acquire the pink, blue or some other coloured pill habit, of weakening the natural excretory powers by the habitual taking of physic or by daily irrigation.

Proper food, drink, exercise and regularity, if carefully attended to, will in most cases keep the bowels in good condition. Overeating is undoubtedly a common and serious factor. "One of the worst cases of arterio-sclerosis I have seen was that of a man aged forty, whose vessels, heart and kidneys were all gravely involved, and whose condition was the direct outcome of his occupation. He was for years on board a large liner, and it had been his duty to taste all the dishes of the various dinners before they were distributed to the passengers and the crew." *

* "Some Aspects of the Senile Heart," by Dr. John Hay, Liverpool, Eng.

Moderation in all things should become his watchword. His exercise should be taken without exertion, his hours of activity should not encroach upon those for rest. Overwork and overplay must be avoided by the one whose blood vessels are affected. Great mental strain, excitement, prolonged effort leave their marks on the arteries, as do all excesses, overeating, overdrinking, sexual excesses, prolonged mental or physical exertion. In fact, the man who has hardening of the arteries, should spend more hours in bed than the one whose arteries are normal.

Sudden change of temperature, particular foods and certain forms of activity may be observed by the individual to give rise to uncomfortable symptoms, as tightening of the chest, or heart flutterings. These inducing causes he must learn to avoid. The skin should be kept clean and active to promote elimination of waste and to prevent sluggishness of the blood in the diminished capillaries.

Arterio-sclerosis involves to a greater or lesser degree the heart and the kidneys; it may be diffuse, involving all the organs and tissues of the body, or it may be local, affecting only a part, as the brain, or a leg.

The general treatment is hygienic: fresh air,

freedom from nervous strain, regulation of diet and of excretions; promotion of elimination by a prescribed course of baths, exercise and often therapeutic gymnastics; the avoidance of everything known to be hurtful.

There is a trite but true saying that "a man is as old as his arteries." The consensus of opinion among medical practitioners of much experience is that a young man with bad arteries is in much more danger in a physical crisis, such as pneumonia or typhoid fever, than one many years his senior whose arteries are normal.

Arterio-sclerosis is known as a progressive disease, but if we avoid or eliminate those things which are recognised as the preventable major causes, namely toxins, it is but reasonable to believe we not only can stop the process, but we can improve the condition. Hardening of the arteries is but a sign of certain changes taking place in the circulatory system, usually involving, as I have said elsewhere, the kidneys and heart, thus becoming a synonym for cardio-vascular-renal disease.

Cardio-vascular-renal disease is increasing so rapidly among the well-to-do as to become quite alarming. Instead of dealing with three distinct diseases, we find them linked together, whether the

high blood pressure indicating the diseased condition of the arterial wall predominates, or whether the urine analysis shows the kidneys to be the most prominent factor in the combination of the symptom complex, or on further examination the heart is found to be the weakest link. When one link is involved, all three are involved, and the essential thing for the physician is to determine the degree of each and direct the treatment accordingly. The toxins of infections, intestinal putrification, badly used foods, which irritate the arterial wall, are especially irritating to the kidneys, causing Bright's disease or the form of kidney trouble we are now considering. On the other hand, the defective function of the kidneys may be the cause of the poisons in the blood stream.

The ill effects of alcohol on Bright's disease are due to its interfering with oxidation, and imperfect oxidation is one of the distinct causes of kidney disease. Any one suffering with cardio-vascular-renal disease should, therefore, abstain from alcohol in every form. It seems apparent that such diet, regulation of habits, physical treatment or medicinal treatment should be adopted as will prevent or decrease irritation in the alimentary canal and thus aid in the prevention and arrest of this pernicious disease.

Another habit which is now recognised as a direct cause of this disease is the taking of such drugs as the coal-tar products. As these drugs are largely excreted by the kidneys, and are more or less irritating to these organs, they should be used with great caution, if at all, when the organs are already impaired.

I shall not attempt to lay down any fixed rule in regulating the diet of those whose kidneys are much affected, as it must be regulated carefully, in view of the physical and laboratory findings. It is demonstrated that kidneys which are impaired do not excrete table salt well, therefore salt should be restricted to a minimum amount. Large quantities of fluid mean more work on the kidneys, more pressure on the damaged arteries by increasing the fluid constituents of the blood, and consequently greater force for the weakened heart to overcome. The fluid intake, therefore, must be regulated according to the blood pressure and urine analysis.

The main object of the stricter regulation of diet where the kidneys are involved is to allow only sufficient amounts of all the elements necessary for nutrition. There should be an avoidance of such foods as cause indigestion or constipation or those things which analyses have

proved difficult for the kidneys to excrete. There should be sufficient food of the kind to keep up the nutritive equilibrium, without adding to the body weight. In general, meats may be taken in small amounts, not oftener than once a day, and recent investigation shows it matters little whether the meats be red or light.

There must be an avoidance of all heavy meats: venison, rank game, all kinds of liver, especially the diseased liver of geese, called *pâté de foie gras*. Almost all of the fresh vegetables may be freely eaten, also cooked fruits, most of the cereals, eggs, bread and potatoes. The selection and quantity of each must depend on the individual and the results of the analyses and medical examination. Detailed courses of treatment should be prescribed where the kidneys are much involved, as general recommendations are quite unsafe.

The heart may show varied forms of functional or organic disturbances when there are deleterious substances in the blood, or when the channels through which the blood flows are contracted, narrowed or lessened in their elastic response. The normal circulation in the body is not unlike, but much more wonderful than, a good water-supply system to a city, the water itself pure and

uncontaminated; the water pipes clean, open and in repair; the well-adjusted engine converting fuel into power proportionate to its task, sending the refreshing stream far and near, wherever it is needed. While even more important than the good water system to the health and well-being of the inhabitants of the city is the good circulatory system to the health and well-being of the individual.

OBESITY

THE disease known as "fatty heart" is, I am glad to say, very uncommon, while on the other hand, general obesity, giving the heart extra work to do and hampering it in its functions, the fat deposits encroaching on the organ, is a condition frequently to be dealt with. The sudden taking on of flesh and the sudden reduction of the same, are alike attended with danger, the vital organs needing time to adjust themselves to the altered condition. While it is many times necessary to reduce the weight, it must be done with the greatest precaution, whether the means be diet, exercise or specific treatment.

Obesity is very frequently due to the lack of sufficient utilisation of food by the bodily tissues. A great reduction of food may not correct the trouble; in fact it may exaggerate it and produce general debility. Auto-intoxication is not infrequently present, to correct which the diet must be regulated, with a reduction of animal food; the food must be thoroughly chewed, one of the preventive measures of obesity, the bowels

well regulated, while exercise promoting elimination should be systematically taken.

Persons suffering from heart and arterial troubles, with an inclination to too much flesh, are very often the dupes of anti-fat treatments advertised to do wonderful things in the way of reducing fat. There are many things known to medicine which will reduce fat, but they do so at such a tremendous strain on the system that the better-class physicians avoid them. No advertised remedy or anti-fat treatment should be undertaken without the opinion or advice of the family physician, who should keep a careful watch for bad effects if he think the remedy at all worth trying. Unfortunately most of the victims do not wish it known that they are taking these various nostrums, and it is not until serious symptoms arise that medical aid is sought. It is often only by accident that the physician discovers that the patient has been taking something to reduce his weight, as it is no uncommon thing that such patients vigorously deny that they have been duped. Any sudden change in weight, no matter whether it be in taking on weight or reducing it, should be strictly avoided.

Anæmia, a deficiency of the blood in quality or quantity, is, in many instances, responsible for

obesity as well as for many affections of the heart. Pure air, sunlight, nourishing food such as eggs, milk, with plenty of vegetables and fruits and meat, are recommended.

METABOLIC DISEASES

METABOLISM, meaning "change," as its etymology implies, is constructive and destructive, the former when foodstuffs in the body are changed into complex tissue elements, the latter when the complex substances are changed into energy. Auto-intoxication and gout are classed as metabolic diseases, because the transformation is not normal, the system being unable to make the proper changes, or to use well certain kinds of food.

Gouty persons should be particular about their daily exercise. Fresh vegetables and fruits, favourable to the reduction of uric acid without adding to the bodily weight, constitute the chief articles of their diet. When the meats are much reduced, a little fat is often permitted to satisfy the desire for animal food. Cocoa and chocolate, although but slightly stimulating, and possessing food values, are constipating to some persons and bad for gout.

"LEAKY HEART"

THE heart is termed, in common speech, "leaky" when one or more of its valves is an imperfect fit when closed, permitting the blood to escape backward. The imperfect closure may be due to a defect in the valve, or the fault may be in the orifice, which the normal valve fails to close, because of the lack of tonicity of the heart, or the trouble may be due to both valves and muscle-fibres of orifice. As long as the blood escapes backward, the already impaired heart has more than its normal work to do to keep up the circulation and the nourishment of the tissues. Not only does the heart muscle itself suffer from lack of tissue nutriment, but it is obliged, though handicapped and much of its force wasted, to do its work for the rest of the system. It is obvious that such a heart will not be able to meet a demand made upon it by sudden violent physical activity or by prolonged exertion, without very great risk.

Neither a defective valve nor an enlarged orifice implies necessarily a leak or regurgitation,

as there may be a readjustment of the parts or an adequate or entire closure and the heart thus enabled to do its work efficiently. A heart which has undergone this process ought not to be heavily taxed, especially if the change be after one has reached the adult age, the youth or child more often making a complete recovery. The leakage, whether it be referable to functional disturbance or to organic disease, may be corrected or amended by treatment. Whatever the nature of the impairment, the general health should be looked after, nervous strain and excitement avoided, giving the heart every opportunity to make compensation for the imperfection. When compensation is well established the individual should be able to lead a fairly active life, free, however, from all imprudence and excesses.

Compensation is said to have taken place when the functional or structural defect is counterbalanced, when the deficiency is made good. As to illustrate with one form of compensation,—when the deficiency in the closure is corrected by a hypertrophy or thickening of the walls of the heart, due to the increased work of the heart muscle. When compensation becomes broken, absolute rest and medical attendance are necessary to promote

its reëstablishment. A hypertrophy may be either an impairment to the organ or a compensatory adaptation, a self-protective arrangement of the heart by which it overcomes or makes an effort to overcome some embarrassment or hindrance; hence, as the former being an active disturber, as the latter a safety means.

Dilatation of the heart is an increase in the size of one or more cavities arising from a relaxation, weakening or lack of tonicity of the heart muscle. Being secondary to some other abnormal condition, it, like hypertrophy, must always be estimated in relation to that other condition.

Rheumatism is the cause of a very large per cent of all valvular troubles, so that when we find a valvular defect we look for a history of rheumatism. The boy or girl who has rheumatism, even in the mild form of " growing pains," or the one who has chorea, commonly called St. Vitus' dance, should be watched very carefully by the parents. Both of these diseases are very frequently accompanied by valvular trouble. Special care is required at this time to see that no indiscretion is indulged in. Oftentimes over-exercise or over-excitement at this time may cause a valvular trouble that may prove a serious handicap to the person a whole lifetime. It should be borne

in mind that rheumatism is a child's disease, indeed it may even attack the babe before birth, and it is no infrequent occurrence to have children born with a valvular defect due to an attack of this insidious disease on the child during prenatal life, causing what is known as congenital valvular disease.

Rheumatism is particularly prone to attack the heart in childhood and in early adolescence, even when the joint symptoms cause little or no swelling or but slight discomfort. These slight attacks are usually called by the "knowing ones" growing pains, and are given no attention until later it is found the child has a serious valvular trouble which might possibly have been avoided, had the proper precautions been taken in time. Rheumatism in later adolescence is not so liable to attack the heart.

Valvular trouble may also be caused by erysipelas or many other acute febrile diseases, and a very insidious feature of this trouble is, that the valvular defect does not manifest itself for some time after the acute stage of the disease has passed away. This feature has been the cause of many serious troubles. The child examined when the acute stage is over and no evidence of valvular trouble discovered, he is allowed to go

out and play or indulge in too violent exercises until attention is called to his difficult breathing, when an examination reveals a marked valvular defect; indeed years may elapse before the valvular trouble manifests itself.

Then again we have valvular trouble coming from severe strain, found not infrequently in athletes, long-distance runners, football players, or in young men who go into severe physical strains without proper training and without proper medical examination and supervision. When one considers the physical strain of these athletes and gladiators, it is truly remarkable to know the almost limitless capacity for endurance of the human organism, when the training is properly and gradually developed.

When a child is convalescing from rheumatism, diphtheria, scarlet fever, pneumonia, erysipelas, typhoid fever, in fact any septic contagious disease, he should be watched most carefully as to exercise. His exercise should be increased very gradually each day and never to the point of fatigue. By this systematic gradual exercise, he will soon regain strength, and the weakened heart gradually grow stronger until it returns to its usual capacity. For it should be remembered that no septic infectious disease, such as is

above mentioned, ever attacks child or adult without weakening the natural strength and endurance of the heart. This is not necessarily lasting, and in the great majority of cases, by careful living for a time, the heart will regain its normal strength; but the normal reserve force of the heart should be carefully tested before medical vigilance is abandoned.

The only means the doctor has of making a positive diagnosis of valvular disease is by a valvular murmur, and as I have said above, this may occur weeks, months or even years after the real cause has passed away. A large per cent of valvular defects in children, which come to the notice of the specialist, can be traced back to some little indiscretion following one of the above diseases. I can imagine an anxious parent asking how long a child should be limited in its physical exercise after suffering from a septic fever. This question must be answered by the doctor in charge, as there is no rule to guide one in answering such a question, for each individual must be limited according as the poisons generated in the disease have affected the heart of the child, and this does not depend on the severity of the initial disease.

I wish here to correct an erroneous idea in the mind of the laity, which is, that a valvular defect

is always fatal. The seriousness of the trouble depends on the degree of damage and on the heart muscle. If the muscle fibres of the heart walls are in normal condition and ordinary care be taken by the patient, a slight valvular lesion may be present for years without giving serious trouble. When a leaky valve is discovered, it simply means the patient must be a little cautious about violent exercise and other indiscretions. He should also visit his family physician three or four times yearly for a careful examination, following religiously every detail of the advice given him. Following this advice is usually no hardship, and may prevent a serious misstep that could be easily avoided. I have walked, played golf and climbed three flights of stairs with a patient who had a marked leaky valve, and he did his exercise with apparent ease and comfort. The muscle fibre of the heart walls was normal, the tone was good and there was no indication of any lack in the reserve force in the heart muscle and no other functional disturbance present. This man intelligently accepted his limitations and followed conscientiously the advice given him.

WEAK HEART

MANY persons who complain of weak heart have not the first sign or symptom of such weakness. This is particularly true of young people who are pale, and delicate in general build, and who grasp at this expression of "weak heart" as satisfying themselves and their friends for not being as strong and robust as their companions. A large per cent of this class are girls who think, and indeed convince their family and friends, that their hearts are very weak and their circulation very poor. These people complain of cold feet, cold hands, and do suffer from both, and they reason that the weak heart is the cause.

When one of these persons is examined, her heart may be found to be normal, with no indication of any weakness, the blood also showing no deviation from the normal. A careful examination reveals a weakened or over-sensitive nervous system, and when she can be prevailed on to get out in the fresh air and play tennis, golf, ride horseback, take long walks, go camping for several weeks, in fact, live out of doors, we soon find

the " God of the open air " brings about a marvellous improvement in appetite, in colour, in spirits, in every way, physically and mentally. When I speak of " weak heart," I mean a weakened condition of the heart muscle. In general, this trouble is caused by the same infectious and contagious diseases which cause " leaky heart." Here again we find rheumatism the greatest sinner.

Weak heart may be caused or superinduced by rheumatism, diphtheria, scarlet fever, pneumonia, typhoid fever, whooping cough, lead poisoning, ptomain poisoning, specific diseases, and many other general or systemic troubles. It is thought that most of these diseases cause weak heart by generating a poison which acts directly on the heart muscle. All septic contagious diseases have a weakening effect on the heart and should always be regarded with much caution in this respect. This caution is particularly necessary with children, who during convalescence from these diseases are apt to indulge in too active exercise while the heart is still under the effects of this poison. Any one suffering from these septic diseases or toxin-producing diseases should be kept very quiet until the excretory organs, the kidneys, bowels, skin and lungs have ample time to rid the system of all the ptomains

generated by the disease, before being allowed to indulge in any active exercise that will tax the weakened heart.

A long-continued high blood pressure will also cause a weakened heart muscle. The high blood pressure causes an increased resistance for the heart to pump against. In the effort of the heart to overcome this increased resistance and keep up the normal blood supply to the tissues, the heart muscle first becomes thickened or hypertrophied and later becomes atrophied, or begins to degenerate, which is manifest by a stretching of the muscle or a dilatation of the heart, more particularly one or both of the ventricles.

One of the first symptoms of heart weakness is shortness of breath. This may come on gradually or it may be brought suddenly to the notice after some such little exertion as would not usually increase the breathing noticeably. A New York banker, forty-eight years old, left his office to return home after an unusually busy day at his desk. On going to the elevated he heard the train coming and rushed up the stairs just in time to catch the car, but almost out of breath and "feeling giddy," as he expressed it, but was fortunate in finding a seat and soon recovered his equilibrium; but his breathing continued

laboured and alarmed him to such an extent that on reaching home he telephoned his physician, who found a marked dilatation of the heart and advised prolonged rest. Not being satisfied with the diagnosis of the family physician, a consultant was next day called in and the diagnosis confirmed. The consultant also insisted on absolute rest. This is such a typical history of these cases, one which came to my notice recently, that I have used it here to show the often sudden and very unexpected onset of this trouble.

What I have said in another chapter on valvular defects on the results of the septic infectious diseases may also be said regarding weak heart. Indeed one of the ways these diseases produce valvular defects is by weakening the heart wall and causing it to dilate until the valves no longer come together, thus permitting the blood to escape backward. A weakened condition of the heart wall may result in a dilatation, a drawing apart of the valves, giving rise to a leak or regurgitation. This naturally puts extra work on the heart, and in meeting this extra demand the walls of the heart become thickened or hypertrophied, as the blacksmith's arm thickens by the constant use of the hammer. This is what is

meant by *compensating hypertrophy*, as in many cases the hypertrophy may fully compensate for the defect in the valve and the leak be closed. Parents should bear in mind that Nature's method of developing the heart and blood vessels is by physical exercise. The child should be encouraged to romp and play. The young boy and girl should take long walks, be taught all the outdoor games and be in the open air as much as possible.

Air Hunger.—Air hunger may be of bronchial origin or of cardiac origin, the latter due to a weak heart, the form which we shall consider here. Unfortunately, too often this "air hunger" is attributed to getting stout or putting on flesh, and is passed over as insignificant, until some more serious symptom manifests itself and causes the person to take notice. The first thing which attracts the attention of the individual is difficulty in breathing on slight exertion, as walking on the level or more particularly walking up a slight incline. This may mean but a temporary weakness of the heart and it may mean something more serious. There are other conditions, it is true, which may induce distress in breathing, but breath-

lessness is so often associated with weak heart that every indication of "air hunger" should be sufficient cause for careful inquiry into the condition of the heart. It is in the *early* stage, when the insidious symptoms cause no personal discomfort, when the trouble creeps so sneakingly onward as to arouse little suspicion, that the condition should be looked into.

Cardiac asthma is one form of air hunger due to a weakened condition of the heart and is often the first sign or symptom of a restriction in the field of cardiac response, when the heart is no longer able to respond to even a small increased demand of the tissues for oxygen, as occasioned by slight exertion. This form of asthma is more common in elderly persons than in the young or middle-aged.

ANGINA PECTORIS

PERSONS suffering from the pains of angina pectoris, who live in fear of another attack when they are free from pain, will want to know first how the repetition of the attacks may be warded off. Until the cause of the pain is removed, in some cases possible while in others impossible, there will be a recurrence of attacks, though their frequency may be greatly decreased by avoiding the things which directly induce them—walking too rapidly, walking against the wind, ascending a hill or going upstairs without frequent rests, walking immediately after meals, lifting or reaching, as changing the position of a heavy chair, reaching to high shelves for books, stooping to lift objects from floor or to put on shoes, mental or physical exertion, sudden change of temperature, as going out from a warm room into the cold or sitting in a heated room in the direct draught of an open window, undressing or dressing in a cold room, contact with cold sheets, over-fatigue caused by the effort of hurried dressing and undressing, cold baths, excitement, the taking of gas-forming

or constipating foods, neglect to relieve the bowels at a regular time.

Of more importance than the attacks and their immediate causes are the primary causes of the trouble and the counteracting measures—the anæmic who are suffering from poor nourishment should be properly nourished, the excessive eater or drinker restrained, over-work and over-worry avoided, alcohol, tea, coffee and tobacco refrained from; last but not least, the condition of the heart and arteries ascertained and treated, and medical advice for the individual observed to the letter.

Angina pectoris, whether it be considered a sign of disease, a pain in the chest, as the term signifies, or a disease itself, of organic or functional nature, is a grave trouble, but not an incurable or irreparable one.

Professor William Osler * recently defined angina pectoris as "a disease characterised by paroxysmal attacks of pain, pectoral or extra pectoral, associated with changes in the arterial walls, organic or functional." It seems evident that the trouble in the better class of society is increasing, particularly in America, due to the

*In his lectures delivered before the Royal College of Physicians of London, March 10-15 and 17, 1910.

high pressure of our twentieth-century life. The stress, strain and worry incidental to large business enterprises form one of the most potent basic factors in causing this disease. My object in bringing angina pectoris to the notice of the public is to teach men and women the essential characteristics of the disease, that by learning the nature of the trouble and seeking medical advice early, much suffering may be avoided.

A pain recurring in the same location repeatedly or under the same or similar circumstances, should have the careful attention of a physician. The sufferers may be divided into three great classes. The first and by far the greatest is the neurotic class, or worry class. Secondly, those who have history of toxic diseases or who continue to poison their systems and contract or irritate their arteries by tobacco. The third class, those whose misfortune or errors have already led to a degeneration in the arterial walls, usually met with late in life.

Pain.—Unfortunately, in many severe forms of heart disease there is no indication of pain, which is unfortunate, because the patient may not realise his trouble, or its seriousness, before it is too late. Even in the acute stage, inflammation of the heart

with ulceration, there is seldom any pain. Ulceration of the valves may proceed to an extreme degree without an indication of pain. On the other hand, the arteries are capable of causing the most intense pain, as every one can attest who has suffered from frostbite and experienced the intense pain caused by the rapid dilatation of the blood vessels. You recall how you paid for the pleasure of your snowball frolic in your childhood when you entered the warm room. If the mistake were made of putting the hands in warm water, the pain was intensified by the more rapid dilatation.

A person suffering from angina pectoris has a great fear of impending danger. I do not wish to be misleading in this too often serious trouble, but let me bring a few facts to the notice of persons suffering from pain in the region of the heart. First: A great deal of pain located in the left chest is nothing more than intercostal neuralgia. Second: A great many pains that even simulate angina pectoris are of neurotic origin and are called pseudo angina pectoris. Third: The persons who think they have real angina are almost sure not to have it. Fourth: Patients suffering from angina pectoris have been known to live for many years. Fifth: Patients have been

known to make complete recovery from the trouble. Some of the best diagnosticians I have known have reported cases who have lived many years after their first attack. Many of these pains are brought on by poisons, as for instance tobacco angina, which is greatly relieved by stopping the cause.

With the early recognition of the trouble, that one may regulate his life to the altered conditions, changing the diet to meet the present demands, changing or correcting habits of work or exercise, with judicious treatment under the careful and close observation of the physician, the prognosis may be very much brighter. It is well to emphasise here that any pain in the chest should be looked carefully into by a physician. When the first indication of pain occurs, which is usually first a feeling of tightness, it is a danger signal. When a man feels a sense of tension beneath the breast bone it is a warning that there is too much pressure on the machinery, and unless there is an easing up a break may occur at any time.

All authorities agree that worry causes a very large per cent of this distressing disease. Men worry because their millions do not come to them fast enough. Men try to live at such a pace to-

day that any depression in business starts them worrying about the disaster and ruin which they see engulfing them. They cannot reduce their army of clerks or cut down the large domestic force, fearing the neighbour across the way will see in this the first evidence of financial decay. Many are unbalanced enough to keep up the bluff and worry themselves into their graves.

Reader, let me say: "If your business worries you, sell it, or your executor soon will, and you can settle up your affairs better than your widow or your heirs; you are much more valuable, or you ought to be, as a husband and father than as a memory. If your load is keeping sleep from your eyes and peace from your soul, drop it—the sooner the better! Have the courage to face a more modest life. If your son does not have the best box at the opera next season he may have more time to cultivate the acquaintance of his father and perhaps learn some of the things really worth knowing in this life. Live within your means and enjoy the peace the Creator intended every man should enjoy."

Angina pectoris is an affection of the arteries, the pain being due to a spasm of the arterial wall. Understanding this, it is easy to realise that we may have anginal pains in any

part of the body. There is no doubt that heredity plays an important rôle in this disease. It is impossible to inherit the disease, but a condition in the arteries may be inherited that tends to this form of arterial trouble. One remarkable feature of this disease is, that it is almost entirely confined to the robust and strong, attacking the male sex much oftener than the female. Seldom does this disease attack the weak or the chronic invalid. It is usually the man who is keeping the engines at full speed ahead, the man who is active in mind and body, pursuing his vocation with a vigorous energy, who is bound to wreck the engine sooner or later. The disease usually occurs between the ages of forty-five and sixty years, at a time when the engine is kept working at its highest speed. When it comes it is a warning that the engine has been kept at too high pressure for too long a time, and where heed is taken, may be the means of prolonging the life of the individual. The disease is peculiar, inasmuch as there is no symptom or set of symptoms which gives any positive clue to the prognosis, and consultants have learned to base their prognosis on the ability or readiness of the patient to carry out the instructions.

Experience has taught physicians that the prognosis depends almost entirely on the life the pa-

tient is willing to lead. It is frequently found that the entire trouble subsides when our pace-making business or professional man slows down the speed, gets out from under his load, gets away from the strain and worry of his environment. Travel will often cure a severe case of angina pectoris; an ocean voyage is often a specific remedy. I have known severe attacks of anginal pains to subside completely in twenty-four hours after the subject left land. Ocean voyages are not a specific for all forms of angina; if they were, the liners would be crowded at all seasons. Some have not the ability to leave their worries on shore and must carry them as long as consciousness lasts. Others can throw off their cares when they leave the roar of Broadway, the telephone ticker, and early realise there is real life outside the great rush.

A number of neurologists have given serious thought to the study of this "hurry-up game" the men of the twentieth century are playing. This game of bluff which the great majority are indulging in is foolish enough to be ludicrous had it not such a serious termination. Some writers seem to think that in the next few generations the human system will so adapt itself to the rush that there will be no danger of arterial degeneration

or angina pectoris to the man of the next century. Studies thus far have led to no discovery of any resistant germ in the human that will render the body immune to the natural results of such irrationalities.

NERVOUS HEART

THE nervous heart manifests many phenomena, the most common of which are heart irritability, palpitation, intermittent pulse, irregular pulse, rapid pulse and heart pain or heart neuralgia. Palpitation is much more common in women than in men, due no doubt in a measure to their more emotional life, to their closer confinement to the house and lack of outdoor exercise. The inherent lower nervous tone of women, their mode of life, their irrational dress, all tend to induce a susceptibility to nervous phenomena and render them much more subject to nervous heart than men.

The pernicious habit of coffee drinking is accountable for more nervous phenomena of the heart than any other one thing. The predominating cause of the irritability of the heart in men is the abuse of tobacco or abuse of themselves by the use of tobacco. Other causes are sedentary habits, dissipation, excesses of all kinds, of eating and of drinking, outbursts of violent passion, etc. The cause may often be an attack of indigestion, of gases in the stomach, or sudden fright. Violent

exercise, such as running for a street car or sudden or rapid exercise after a hearty meal, may bring on an attack of palpitation. In some instances, "heartburn" or hyperacidity brings on an attack.

These attacks are more often functional than organic, and though they are annoying to the patient, they rarely indicate any serious heart disease. Distressing as these attacks are, lasting only a few minutes or even a few hours, they often pass off, leaving the person seemingly none the worse, though the reserve power of the heart is more or less overtaxed.

The immediate inducing causes of the attacks are as a usual thing not difficult to discover and avoid, apprehension retarding or preventing recovery. The majority of patients soon learn what the exciting causes of such attacks are and learn to avoid them. I know a young man, a user of tobacco to excess, who has an attack of palpitation if he runs a short distance or hurries up a flight of stairs. In others, the eating of certain foods will induce an attack. Indeed there are many different causes which will excite an attack, and which the person may soon learn to guard against.

An attack may sometimes be overcome by

sitting or lying quietly and taking twelve to fifteen slow, very deep, breaths. In many cases I have found deep breathing an effective measure and one, in most instances, easily employed by the patient afterwards. Naturally, if the exciting cause is an overloaded stomach or an accumulation of gas in the bowels, the cause must first be removed by treatment or diet, as many of the persons suffering from palpitation have a depleted nervous system from some specific cause, such as tobacco, alcohol, overeating, etc.

To improve the nervous system a trip to the mountains or seaside is often beneficial. If this is impracticable, a change of scenery can be had by a visit to the country or elsewhere. If the attacks occur at night or after certain meals, the time of taking the evening meal should be regulated and nothing taken for that meal which will cause indigestion and gas. Should the attacks come on after heavy meals, light meals with food between times should be taken, that the appetite be appeased and temptation to overeat avoided. If a person suffering from palpitation is using more than one small cup of coffee for breakfast, he should stop it, as caffeine, the alkaloid of coffee, is a powerful stimulant to the nerves of

the heart and is frequently the exciting cause of attacks. I have known two cups of coffee to bring on such a violent attack of palpitation in a strong man as to cause fainting. Such a person should not use coffee at all; indeed any person with an irritable heart should abstain from drinking coffee in any quantity or form. So many have the idea that diluting the coffee with quantities of milk renders it less harmful. It is the amount of coffee taken that does the mischief. Two tablespoonfuls of strong coffee of the best grades may contain more caffeine than a quart of a cheap grade, a large per cent of which is chicory or cereal.

A depleted nervous system may manifest itself through the heart by an intermittent heart beat or an intermittent pulse. This is rarely indicative of heart trouble or organic heart disease, and is usually attributable to a nervous irritation of the heart which does not allow the ventricle to fill with blood, therefore occasioning an incomplete contraction, the wave of which is insufficient to be felt at the wrist. An intermittent pulse is occasionally met with in strong, healthy persons, who, notwithstanding, may live to a ripe old age.

Under no circumstances should a patient take his own pulse, as it only tends to keep the

mind dwelling on what is more often a supposed trouble than a real one and teaches him nothing. If the pulse is too fast he worries about it, becomes excited over it and only adds fuel to the fire. Should it be necessary, for any reason, to watch the pulse it must be done by the physician or trained nurse.

Irregularity of the heart beat is somewhat different from the intermittent beat, though the irregularity may be due to the same cause, an overwrought nervous system. Irregularity may, however, be due to or associated with a valvular disease, and should have proper medical attention. Where it is found that the temporary attacks are due to tobacco, coffee, tea, alcohol or indigestion, the remedy is simple and relief sure on the withdrawal of the exciting cause. The cause must, however, be determined by the physician, if not obvious enough to be seen and corrected at once. Should a cup of coffee or tea or a strong cigar cause an attack of irregularity of the heart beat, it ought not to require the services of a physician to apply the remedy.

Pain in the region of the heart, unfortunately, cannot always be classed as a functional disturbance, but it is so often of purely functional or nervous origin that I feel justified in describ-

ing it under functional troubles. There is no symptom which causes such apprehension of heart trouble as does pain in the chest. Pains in the chest are often referred to the heart, which have absolutely nothing to do with that organ. These pains may come from the lungs, muscles of the chest, stomach or from the intestines. Intercostal neuralgias are most often mistaken for heart pain, and particularly when on the left side of the chest, causing the scare of heart disease.

Cardiac, or heart neuralgia, is not a common trouble, and when it occurs often or continues for any time, should have medical attention. In real heart pain, the cause is most often due to poisons or the action of these toxins on the tissues of the heart. Tobacco is again the most active agent. The toxins left after a depressing illness may cause pain in the heart. Sudden shock or great emotion will frequently bring on a severe attack of heart pain, while a violent fit of anger may cause an attack of pain in the heart of such serious nature that it becomes imperative for the high-tempered person to so regulate his life as to avoid the irritating conditions which cause such loss of self-control. Far better is it for such a person to live in the peace and quietude of the mountains or country than to die prematurely in

the whirl and din of a great city. Thousands of men and women are whirling along in the terrific maelstrom of business and social life in the great cities to a mild form of suicide.

In functional disturbances, particularly where such disturbances are accompanied by pain in the region of the heart, there is always more or less anxiety. In fact, the feeling of apprehension is frequently more intense than the actual pain. I have seen this anxiety so intense as to cause palpitation of the heart, cold perspiration of hands and feet and other nervous symptoms in persons in whom the most careful examination failed to reveal the first indication of heart disease. These pains are oftentimes severe and the anxiety hard to endure, yet often so distinctively different from the real angina pectoris that no one should mistake them. A careful examination by the family physician may relieve the dread and consequently relieve the whole trouble.

RHEUMATISM

ACUTE articular rheumatism, or rheumatic fever, was first described in the middle of the eighteenth century by Boerhaave, a distinguished Holland physician, who, himself a sufferer, wrote quite accurately of the symptoms, giving a most lucid account of the disease. For years, the disease was thought to be due to chemical changes in the blood. More recent investigations, however, have shown that it is probably of bacterial origin. There are many forms of arthritis, some affecting one joint and some attacking many joints. These may be due to several causes, and should not be confounded with rheumatic affections.

What is known as rheumatism may be defined as an acute or subacute specific fever attributed to bacteria, having an indefinite and variable duration, from a few weeks to a number of years, with well-defined clinical symptoms, the most constant of which is, inflammation of the heart and one or more joints of the body. So commonly is the heart involved in this disease in the young, that one English author insists that it should be called

"heart fever," instead of rheumatic fever. The duration of the disease may be indefinite, not infrequently determined by the heart symptoms, which may continue for some years. One is impressed in reviewing reports of heart specialists on cases of heart trouble in patients under thirty years of age, with how many are attributed to articular arthritis of childhood, perhaps unrecognised at the time. I might add, a large per cent of heart trouble found later in life is traced to the same cause. Every child complaining of pain in the joints or limbs, or noticeably short of breath, should be kept quiet, preferably in bed, until assured by a physician that exercise may with safety be resumed.

Rheumatism is essentially a disease of childhood, often occurring very early indeed, not infrequently attacking the child in prenatal life, leaving its pernicious scar on the heart valves and producing a congenital heart murmur which the child may carry all through life. Mothers, during pregnancy, should keep themselves as free from rheumatism as possible, by avoiding the inducing causes, such as colds, and by taking care of their general health.

Rheumatism in the young is now considered one of the most serious diseases of early life, and

is directly responsible for crippling most of the defective hearts found in adults. It is my experience and the experience of most practitioners that when a child is attacked by rheumatism, no matter in what form, the heart is almost invariably involved, and indeed in a large per cent the heart is the principal seat of the infection, the joint and muscular manifestations being so slight as to almost escape notice. What I wish to impress on the minds of parents is the established fact that the heart is the child's most vulnerable part, the poison of rheumatism, the invading germs attacking the heart in such numbers as to cause an inflammation of the heart walls, called rheumatic carditis, that the poison of these germs often produces paralysis of the heart muscle, with subsequent dilatation.

A child with rheumatism, or growing pains, should be watched most carefully. The diet should be regulated to prevent indigestion, the bowels should be kept very regular, the exercise should never be violent or exhausting. The clothing should be warm and comfortable, guarding against abrupt changes in temperature. The child should have plenty of fresh air at night, as well as during the day.

GENERAL ADVICE

It is the patients of middle age and upward who consult the physician for the amelioration of the results of sins against equanimity of living. To those who are beginning to suffer from the toxic effects of disturbed digestion due to a derangement in the dynamics of the intra-abdominal blood pressure, the physician may advise moderation, with a reasonable assurance the advice will be heeded. It is, however, for the great horde of the younger generation that the gospel of moderation is most needed.

To the young men and young women whose excessive and manifold over-indulgences are threatening the energy and life of nations, I should most like to spread words of warning; the young men against excessive smoking, irregular eating, particularly at night, against the revolting habit of bolting food, against indulging in excessive feats of strength without careful and long preparation, against irregular hours and loss of sleep, against the strain and excitement of high-speed motoring, and against that most deadly of

all, "sowing of wild oats." The young women I must warn against excessive coffee and tea drinking, frequency of social gatherings and against the greatest of all sins among young women, the tendency to ignore the importance of attending promptly to the calls of nature, allowing slight extraneous influences to postpone internal necessities at the expense of serious derangement in a vital physiological function.

These excesses, these irregularities inevitably lead to an arterial condition which causes human beings to grow old long before their time. It is difficult to estimate the economic value to a country of the loss of activity of men who are impaired mentally or physically, partially or completely incapacitated for life by deranged circulatory functions. The efforts of the medical profession have been principally directed toward lowering the frightful infant mortality. This effort is being crowned with excellent success. Laudable as this movement is and the rich results it is yielding, we should not forget the almost criminal negligence of the middle-aged, still left exposed to many dangers as they rush for the top of the hill of success. The medical profession must give the middle-aged more serious thought, for although we may be unable to stem the mad rush, the almost

inhuman waste of energy, we can in a measure regulate the habits of patients so as to mitigate their chances of physical breakdown.

To be successful in business a man must recognise early symptoms of debility or weakness in the market. He learns this by constantly keeping his fingers on the commercial pulse. If he discovers any premonitory symptoms of depression in the market, which may affect him, he immediately takes active and vigorous steps to avoid heavy losses, and by so doing, often avoids temporary embarrassment or total ruin. Our business men should use the same sagacity, the same common sense about their own physical well-being.

The sedentary life of a large portion of our men and women of to-day tends to cause congestion of the abdominal organs, which, coupled with mental strain and errors in alimentation, reduces the bodily powers.

Every one who has any heart trouble should be under the care of a physician. It is quite safe to say that any regular, respectable family physician is in a position to give a heart patient much more rational and honest advice than is an advertiser. Most of the persons who are dupes of quacks have received proper advice from their physicians, but they want to be cured

with no effort on their own part, or to find a short cut to health. They ignore diet restrictions impressed upon them by their physician, they ignore exercise limitations enjoined upon them, in fact indulge themselves in every way, ceasing to carry out their part of the treatment as soon as they are better. "My doctor says I have a diseased heart and wants me to stay at home to rest or to go to a distant health resort. I don't believe there is anything wrong with my heart."

Why will men refuse to apply the same business sense to their health that they do in business affairs? If one of these was told by his engineer that something was wrong with his factory machinery, he would probably believe him or call in an expert to verify or disprove the statement, as he would not like to afford taking the risk of stopping the works, or to risk breakage, burning or explosion through defective machinery. This is the reasoning ninety-nine out of every hundred business men would follow and act upon, while just about the same per cent will show the most wanton ignorance in taking care of their own health.

To these men I want to say this: "Ask yourself this question, 'Does my doctor really see something in my condition that I cannot see or feel?'"

Unfortunately it too often happens that the patient cannot see or feel the real seriousness of his condition. A doctor who would exaggerate a patient's condition just to get a fee is worse than a thief. From the latter one's locks and bolts will protect him, while the former is subject to no law, civil or divine. If you have no confidence in your doctor's judgment, by all means go to one in whom you can have confidence. Listen to what he says and follow his advice as implicitly as you would the advice of your legal adviser were you in a court of justice being tried for your life.

Any man who reads these pages may sit down and recall ten men of affairs who have died suddenly of heart trouble, the majority of whom, no doubt, could have lived much longer, or to a good old age, by proper regulation of their lives, men who showed the most ignorant and reckless indifference to their own condition. If these same men had been on trial for their lives they would have spent their last dollar and tried to move heaven and earth to save the very lives which they themselves so carelessly sacrificed.

Some persons take pride in posing as different from other people, of less destructible substance, not of the common material of other men. Although they see their acquaintances dropping out

of the ranks, yet they act and live as though illness can never affect them. Some men have the false idea that they would be forever disgraced if for the sake of their health they should leave their post of duty for a short vacation and become a "grunty old woman," as many express it, or that their friends at the club or bank or office should know that they have hardening of the arteries or a leaky valve or a dilated ventricle.

There is in these cases a nice question of psychology. Most men so afflicted are ambitious, selfish in not making every effort to protect themselves for their families, and often simply refuse to accept the true seriousness of their own condition, while if another member of their family be so afflicted they are over-solicitous.

The traveller observes with a certain feeling of security the careful inspection of a fast train at every stop, men under every car, each part being carefully examined. A railroad president or manager would think it bad business policy to neglect these important details. He would consider it too much risk for the slight expense and trouble. Yet perhaps this same president is rushing through life at a pace equal to that of the limited express on his road, with stops few and far between, neglecting at the stations to have an examination of

his own human machinery until a breakdown occurs. Then he telegraphs for the Wreck Doctor. The machinery may be patched up, but unfortunately it is too often beyond repair.

Experts can tell us to the fraction of an ounce the number of tons pressure a given piece of steel will stand. Business men demand such knowledge; but these same business men will demand of their own flesh and bone a pressure and strain they would not expect from iron or steel. These same men, who show such business shrewdness, are, strange to say, often the ones who show the least common sense about their own physical condition. These are the men who have for years boasted of never being tired. They have inherited a good constitution, and through dire ignorance, wanton indifference and criminal neglect to human limitations have so misused their sturdy heritage as to become wrecks, fit only for the scrap heap at an age when they should be in the full vigour of manhood.

Significance of Rheumatism.—Now a word to parents. The "growing pains" of which your child complains are probably rheumatism, not to be treated lightly, as injury may be done to the heart, making serious trouble later on. The

proper attention and care in time may save much suffering and sorrow in later years.

Tonsillitis is but a form or manifestation of rheumatic disease, and in many cases in children there is a very close connection between tonsillitis and endocarditis. One cannot too strongly emphasise the importance of giving the closest attention to all local infections in children.

The children afflicted with rheumatism, chorea or any of the septic contagious diseases likely to cause heart disease should be under the constant vigil of a careful physician, whose instuctions should be followed to the letter. These children should have an abundance of fresh air and such exercise as is strictly recommended. There are oftentimes fatal mistakes made in overstepping or ignoring the doctor's orders. Children with growing pains or St. Vitus' dance should always be watched a little more carefully than others. For all, the diet should be carefully looked after, their bowels kept regular, the kidneys active. They should be exposed to extremes of temperature as little as possible. Their clothing should be warm in winter and not too light in summer. Their baths should be tepid and regular, to keep the skin well and active. Swimming in the open

should be restricted, particularly in fresh-water streams and lakes. It is only when the water is known to be warm, and when every precaution is taken for rescue in case of cramp, that such children should be permitted to swim. If sent to school, the teacher should be advised of the child's condition, that such a child be not subject to too much nervous strain.

These children, often very bright and alert, must be gently but firmly restrained in their tendency to over-work or over-play. Children often present a difficult problem, as they do not understand the importance of the restriction and forget themselves in the interest or excitement of play. Then again it is bad to have a child grow up thinking too much about itself, fancying it has ills with which it is not afflicted. The parents of the young woman who has heart trouble should have her carefully examined by a physician before she promises herself in marriage, to know whether the condition of her heart is such that she may be able to perform the duties of a wife; whether she may entertain the hope of bearing children without risking her life.

These are questions of vital importance to every girl afflicted with heart disease, and should be thoroughly understood by the young woman

and by the man whom she would wed before an engagement be made. The parents of the girl should not deceive themselves in thinking such matters will adjust themselves after marriage; on the contrary, they are more apt to lead to an early and embarrassing rupture of marital relations. On such a serious matter, involving as it does the whole future life of husband and wife, the very best medical advice should be obtained, that there may be an assurance of the physical fitness for connubial happiness or that no engagement be made. Cardiac trouble need not necessarily debar a woman from marriage, nor from bearing children, unless there be an enlargement of the heart, although delivery and child-nursing are a strain on the heart.

In the case of a man, the comforts and pleasure of a home, the encouragement of a helpmate who sympathises, must be weighed or balanced against increased cares, added business activity, in the view of his particular form of trouble, whether insignificant or serious. The young married man should not delay choosing a family physician, if possible one who will be his friend and a friend of his family. The family physician should be one in general practice. He it is who knows the children from

their birth, who becomes familiar with all the family traits and the personal idiosyncrasies of each member, who cares and sympathises when sickness and suffering is in the home, who has an affection for the children and rejoices with the parents when they are well. Such a family physician is an invaluable asset. Should a physical crisis come to any member of the family, his aid is inestimable to the specialist who is called in only in time of crisis, when the patient is most distorted from the normal.

Venereal Diseases.—Syphilis plays such an important part in the cause of heart and blood-vessel diseases that I feel it my duty to give here another warning cry to the public, that the young man may be saved from the terrific dangers caused from this unclean disease. Syphilis has many sins to answer for, and among the most deadly are the degenerative changes it brings about in the walls of the arteries. I do not wish to cast any suspicion on thousands of men who are suffering from arterial trouble with no indication of venereal disease, men who have led clean moral lives, but who have inherited a tendency to hardening of the arteries or acquired it by strenuous living or from other causes.

Gonococcal infection is often an etiological factor in heart disease causing destructive endocarditis and not infrequently leading to a serious termination. This is one of the most widely spread of venereal diseases and its serious and destructive consequences should be known to every young man and woman.

To the parents let me say, "Help your boy and girl, not alone by giving them superior moral educational and social advantages, but by guarding them against ill health. Not only should it be a solemn duty to talk to your girl and boy when they are approaching the age of puberty, but it should be done with the reverence which every man and woman should feel is sacred to parenthood, and which will impress the youth with the sacred meaning of his manhood and the girl with the significance of her womanhood. If you are a father, let me pray you to reflect whether your father did this for you or whether he did not, and how much your own life or health or your own mistakes and ill health are due the parent's wise commission or thoughtless omission of duty in this matter. ". . . The basis of economic life is individual responsibility. It is designed that each grown person should feel that the wel-

fare of himself and his family, if he has one, rests upon himself. The state enters where his powers are insufficient." *

The boy should know that chastity is not incompatible with good health. Many good boys have been led by honest, well-meaning people to believe that it is, and have tainted not only their souls but their bodies by a dreadful disease, which attacks the heart and other organs.

Age of Prevention.—The health and hope of the human race depends in great measure upon the physician, and the general public must soon come to a realisation of this fact. It is estimated that about 80 per cent of all diseases which now afflict the human family are preventable. The public has been dazzled by the brilliant achievements of our modern surgeons, and well they may be, for the strides made in many fields of surgery are almost beyond belief. In this respect the public has again shown its innate love for the spectacular or daring, thus stimulating surgeons to great feats in operative skill. Operations which were a few years ago thought impossible are now daily or even hourly successfully performed. Indeed there is no vital organ of the human body, even to the

* Richard T. Ely, "Political Economy."

brain and heart, on which the best surgeons of to-day may not operate with success.

While we are marvelling at the skill, zeal and valour of these specially endowed men—for good surgeons are born, not made—let us not forget that great army of medical men who are quietly working in the laboratories, studying the cycle of existence of some germ that is destroying thousands of human lives annually. The age of prevention is at hand, and the public must recognise it. These quiet laboratory workers are the ones on whom the public and the practising physicians must depend for guidance in the advanced movement of prevention of disease. If the money now spent in the treatment of disease were employed in prevention, how much happier would our human family be. The misery, sorrow and suffering caused by preventable diseases cannot be calculated in dollars and cents. The individual is a unit of the nation, and when the individual or the individual family is healthy, cheerful and contented the nation may be said to be fulfilling its function to the individual; but when the contrary is true, as it is in so many of our American cities, there is discontent, strife and sometimes anarchy. It will remain a lasting monument to the young state of Oklahoma that her Senator, Robert L. Owen, has

done so much to remind his nation of its urgent duty in the protection of the people.

The nation is spending millions annually in protecting the farm animals of the country, while eighty per cent of the people are dying from preventable diseases, a direct disgraceful reproach to any intelligent country. Much thought and effort has been given in the last ten years to the very worthy cause of saving the babies, with the result that the infant mortality has been diminished very materially in the past decade. The chances for the child to reach adolescence have very much increased in this time, but the chances for reaching very old age have not increased proportionately. Indeed, it is said that owing to the vicissitudes of our modern life, the chances for reaching eighty have reduced in the past two decades.

It has been my object to point out some of the errors which oppose longevity, to advise men to refrain from forming habits which tend to shorten life and make the evening of life's day a torture instead of a joy. Men are apt to consider the prescription of regular living or the modification of habits as a restriction of their personal liberty or personal pleasure, and it is very difficult to appeal to their reason on such matters.

For them, "There is scarcely any (folly) against which warnings are of less efficacy than neglect of health." * Men will take chances of wrecking their physical status which they would not think of taking with their financial or social standing—recognising no law, ignoring human reason in dealing with their own bodies, taking greater liberties with physical laws than do any other species of the animal kingdom. I know of no other animal which forms so many pernicious habits destructive to life as does man.

Some heart patients violate every law of health, while diligently searching the papers for some patent medicine that is "Guaranteed to cure." They are not satisfied when their physician, a man whom they do know to be honest, tells them that a severe valvular lesion cannot be entirely cured, but that by proper living and care much may be done in the way of repair. Remedies advertised as infallible cures, much like the plant called "cure-all," might be more properly called "cure-nothing," having no place in rational treatment. In this enlightened day it is often a real surprise to find an otherwise intelligent person displaying the most child-like faith in a quack, who advertises "Cure guaranteed or money refunded." I regret

* *Rambler*, No. 48.

to say, some of these advertisers have medical diplomas, and should have a higher sense of their position in life than taking advantage of the credulity of their suffering fellow-men.

The man who holds out false hopes of curing a heart patient by some secret, short, magical method is worse than a thief, for he not only robs such a patient of his money, but what is infinitely worse, robs him of his chance of being benefited by proper rational treatment and steals from him often the last chance of getting relief. As a general rule, the patient should: Beware of the physician who guarantees cures. Beware of the one who has some special form of treatment, which he doesn't reveal to other physicians. Beware of the one who diagnoses the case by letter. Beware of the one who has something to sell, for whose "dollar bottle" or whose high-sounding apparatus are bartered precious chances of restoration to health.

Physical examinations of the well from time to time should be much more common. Some persons shun advice, fancying themselves secure from disease as long as they are kept in ignorance of its existence. They remind one of a chicken, which, when pursued, hides its head under a log or stone and closes its eyes, feeling itself safe

from danger. When mental or bodily activity is followed by unusual fatigue or exhaustion there is sign for investigation.

Only those persons who read the medical journals and the recent medical publications can have any conception of the tremendous effort being made by the great bodies of medical men the world over in the prevention of disease. Instead of paying out sums to further their profession pecuniarily, to increase their practice, they are giving out enormous sums to prevent disease and to decrease the number of patients. The Medical Association of America spent last year forty thousand dollars in this great cause. Further, there is a written or unwritten law in every medical society of any importance, denying the right of any member to withhold from his profession any discoveries which may alleviate suffering or prolong life. The physician has no patent-right to a remedy. If he have a patent it is apt to be regarded by the medical profession as a patent-wrong, with direct or indirect homicidal consequences.

There never has been a time in the history of medicine when physicians were in such position to know the condition of the heart as they are to-day. The modern scientific instruments of precision, the

sphygmograph, polygraph, sphygmotonograph, orthodiograph, electrocardiograph and others not necessary to mention, have given an understanding of the heart functions entirely unknown a few years ago. With these instruments we are able to measure the exact amount of resistance the heart is pumping against, we are able to detect the slightest irregularity in the pulse beat, we are able to measure the pulse wave; we are able to observe the slightest enlargement; we are able to detect the slightest weakness in the heart muscle; we are able to measure with a fair degree of accuracy the amount of reserve force in the heart muscle; in other words, we can get a fairly accurate estimate of the amount of work a heart is capable of doing. We are further enabled by these instruments to study much more accurately the mechanism by which symptoms are produced and to interpret their prognostic significance. It will be readily seen that these studies and interpretations are invaluable in guiding us in our treatment of heart trouble. In setting forth the advantages of the modern instruments of precision as an aid in diagnosis, it is not my intention to undervalue the interpretations of the cultivated finger and experienced sense of the practitioner, which no instruments will ever dispense with, but

which, when supplemented or verified by the instruments, conduce to accuracy and better comprehension of heart diseases.

"When the history of the present era is written, the most important facts to be recorded will not be those connected with politics or international relations. The historian of the future will regard as the most important event of the present period the acquisition, beginning about 1870, by civilised man of the knowledge and control of preventable diseases." *

* *The Journal of the American Medical Association*, Editorial, July 20, 1912.

THE END